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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 5 IN SET 197

	Emerson Models 721D and 728D (Ch. 120166-D) are covered in Photofact Folder 5, Set 197. Later Production Changes on Ch.120166-D and the addition of Model 736B (Ch. 120171-B) were added with Production Change Bulletin 65, Set 202-1.
Model 743B (Ch. 120171-B)	Model 743B, which uses Ch.120171-B, has been added. In addition, to the differences given in Production Change Bulletin 65 between Ch. 120166-D and 120171-B, the horizontal output transformer should be changed to part #738075.
Model 740D (Ch. 120173-D)	Model 740D (Ch. 120173-D) has been added. Ch. 120173-D is identical to Ch. 120171-B, except a 21FP4A picture tube is used and the 500MMF, high voltage filter capacitor, and 100KΩ, high voltage filter resistor are not used. Ch. 120173-D, also, uses a different tuner (part #47071l) which is identical to tuner #470688, used in Ch. 120166-D and #470704, used in Ch. 120171-B, except for lead length. In later production the 47071l tuner has been used in all three chassis.
Model 750D (Ch. 120166-D)	Model 750D (Ch. 120166-D) has also been added. This Model is electrically identical to Model 721D.
Ch. 120166-D Coded A thru D	Production Changes through triangle D in Ch. 120166-D are covered in Production Change Bulletin 65. In later production the following changes were made.
Ch.120166-D Coded E Ch.120171-B Coded A	Chassis 120166-D, coded triangle E, chassis 120171-B, coded triangle A and initial production of Ch. 120173-D have the 4.5MC trap, L23, electrically moved to the plate circuit of V7. The physical location of the trap remains the same. This change was made to increase the audio sensitivity and to increase the 4.5MC rejection in the video. A partial schematic, showing the revised circuit is given on the reverse side. In sets using the trap in this location the following procedure should be followed to align the trap: 1. Connect a signal generator, set at 4.5MC, through a .01MFD capacitor to the grid (pin 1) of the video output tube (V7). 2. Set the contrast control for maximum contrast (fully clockwise). 3. Connect the high side of a VTVM, set on a DC scale, through an RF probe, to the cathode of the picture tube (pin 11). Connect the low side to chassis. 4. Adjust the 4.5MC trap (L23) for MINIMUM reading on the VTVM.
Ch.120166-D Coded F Ch. 120171-B Coded B	In Chassis 120166-D, coded triangle F , Chassis 120171-B, coded triangle B, and in initial production of Chassis 120173-D, a 100Ω, ½W, resistor was added between the plate and screen of the vertical output tube, V16. This change was made to eliminate popping in the audio, when the vertical hold control was adjusted.

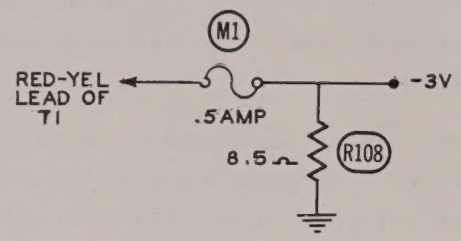
EMERSON MODELS 721D, 728D (Ch.120166-D), 736B (Ch.120171-B), 740D (Ch.120173-D), 743B (Ch.120171-B), 750P (Ch.120166-D)

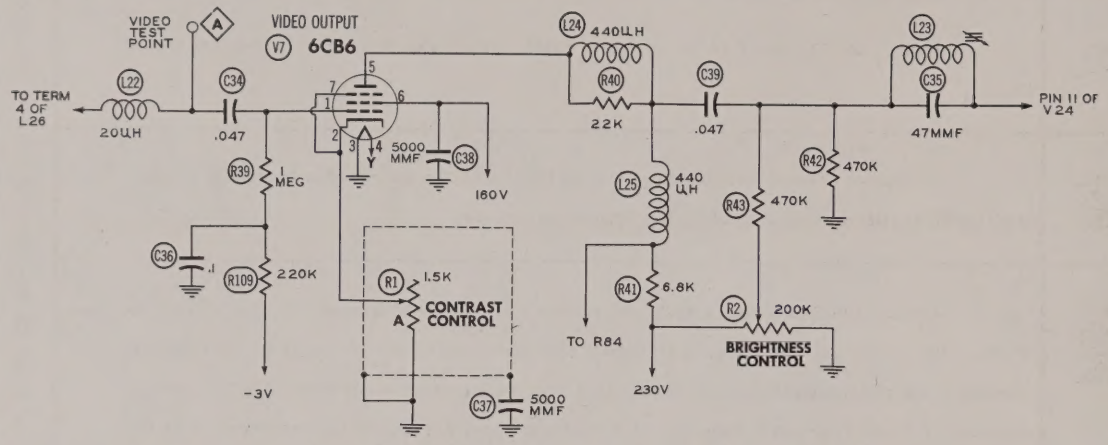
(Continued on the Reverse Side)

PRODUCTION CHANGES
BULLETIN 77

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1953 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Ch.120173-D Coded A	In Chassis 120173-D, coded triangle A , a 500MMF high voltage filter capacitor was added from pin 7 of V21 to ground and a 100KΩ resistor, was added in series with the high voltage lead to the picture tube. NOTE: This change was effective for only a small quanity of sets. Later production reverted back to an uncoded chassis, since this change has little or no effect on the operation of the set.
Ch.120166-D Coded G Ch.120171-B Coded C	To decrease the bias applied to the grid of the video output tube and thus increase the video drive at high settings of the contrast control in Ch.120166-D, coded triangle G . Ch. 120171-B, coded triangle C Ch.120173-D, coded triangle B the fuse was relocated. A partial schematic of this circuit is given below.





REVISED VIDEO OUTPUT CIRCUIT USED CHASSIS 120166-D E & 120171-B A

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ADMIRAL
MODEL RC600

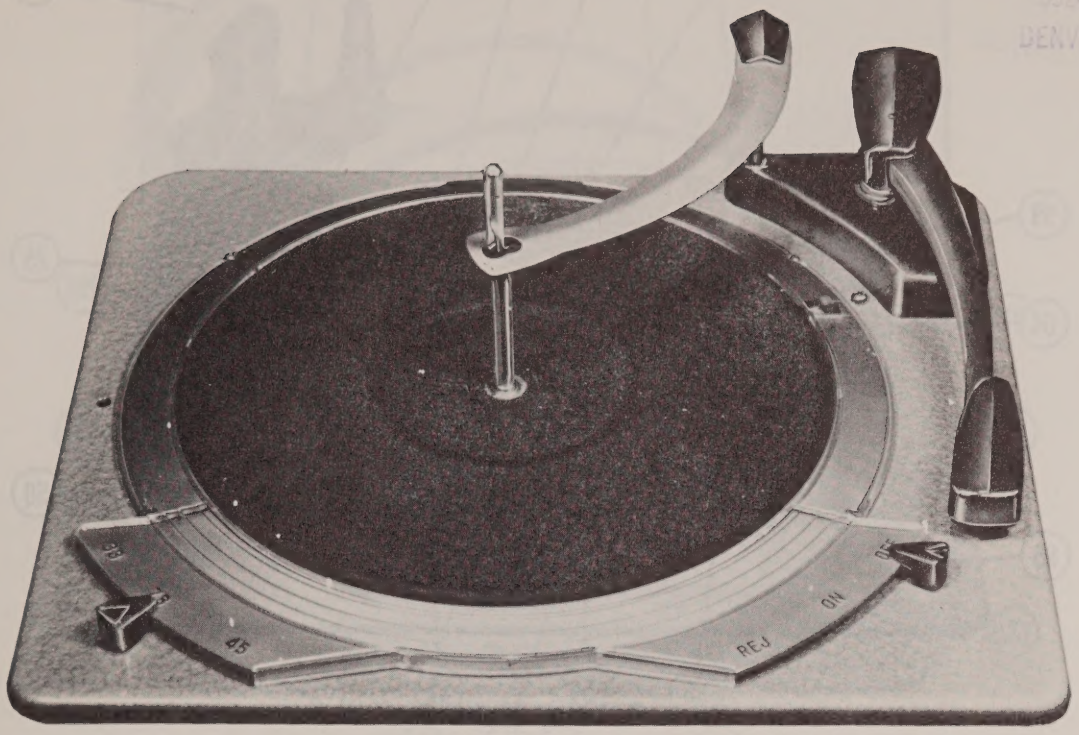

Figure 1

ADMIRAL
MODEL RC600

GENERAL INFORMATION

The Admiral Model RC600 Record Changer is designed to play standard 78 RPM, fine-groove 45 RPM, or long-play 33 1/3 RPM records of standard commercial dimensions. Records up to 12 inches in diameter can be played.

Features of this changer include playing and automatically changing as many as twelve - 10", 78 or 33 1/3 RPM records, or ten - 12", 78 RPM records or twelve - 12", 33 1/3 RPM records, or fourteen - 7", 45 RPM records, or ten - 7", 33 1/3 RPM records.

Do not intermix these records.

This changer automatically shuts-off after the last record has been played.

Connect this changer only to a source of 117 volts, 60 cycle, AC supply.

Manufactured by:

Admiral Corporation
3800 Cortland Street
Chicago, Illinois

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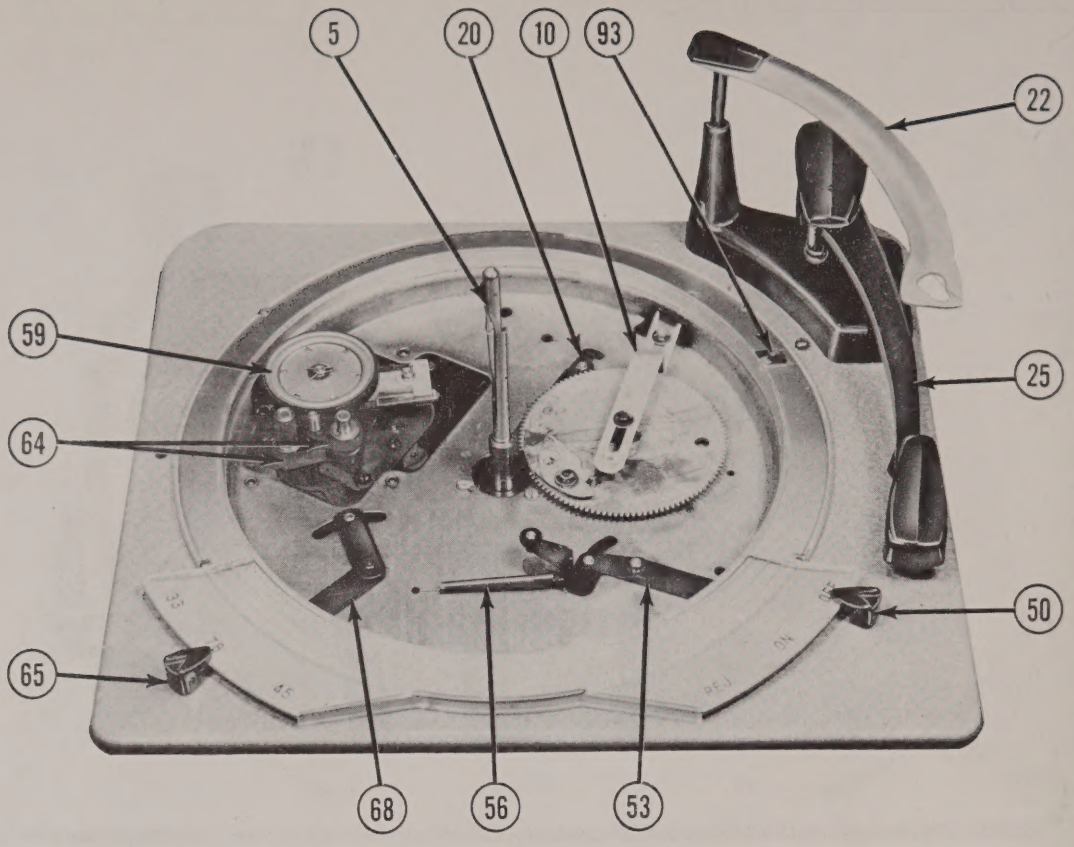

Figure 2

OPERATING INSTRUCTIONS

Loading and Starting-

1. Select a stack of records of the same size and speed. Set speed control knob (65) to speed corresponding to type record to be played.

2. Grasp the leveling arm (22) at the shaft end and lift it to clear the top of the spindle (5). Swing the leveling arm to the right as far as possible.

3. Place the stack of records on the spindle and lower to the off-set shelf. Hold records level and replace leveling arm (22) over spindle.

4. When this changer is operated in a radio - phonograph combination, controls on the radio control panel must be used.

When the record changer is operated in television radio-phonograph combination models, the audio from the pickup cartridge is applied through the function selector switch to the sound amplifier of the television chassis. The shielded cable (85) from terminal board (84) is plugged into a socket on the television chassis. The television-radio-phono function switch, the Off-Volume control and the Tone control on the television control panel must also be used while operating the record changer. Power for the phonograph motor is obtained from a socket on the television chassis.

5. To start and operate the record changer, set the selector knob of the T-R-P function switch on the television control panel to the "P" position. Turn the Off-Volume knob to the right (clockwise). Slide control knob (50) to the "Rej." position momentarily and release so that it may return to the "On" position. As the needle lands on the record, adjust the Volume knob for desired sound level.

Rejecting a Record-

To reject a record at any time while the changer is operating, slide control pointer (50) to the "Rej." position and release.

Stopping-

To turn off changer before automatic shut-off, slide control pointer (50) to "Off" position. The tone arm may be carefully lifted off the playing surface of the record and placed on the tone arm rest (46).

CAUTION: To prevent damaging the mechanism, do not switch off the record changer or handle the tone arm during the change cycle. The changer should be stopped manually only after the mechanism is out of change cycle and has begun playing a record.

Unloading-

Grasp the leveling arm (22) at the shaft end and lift it to clear the top of the spindle. Swing the leveling arm to the right as far as possible. Lift the stack of records off the spindle.

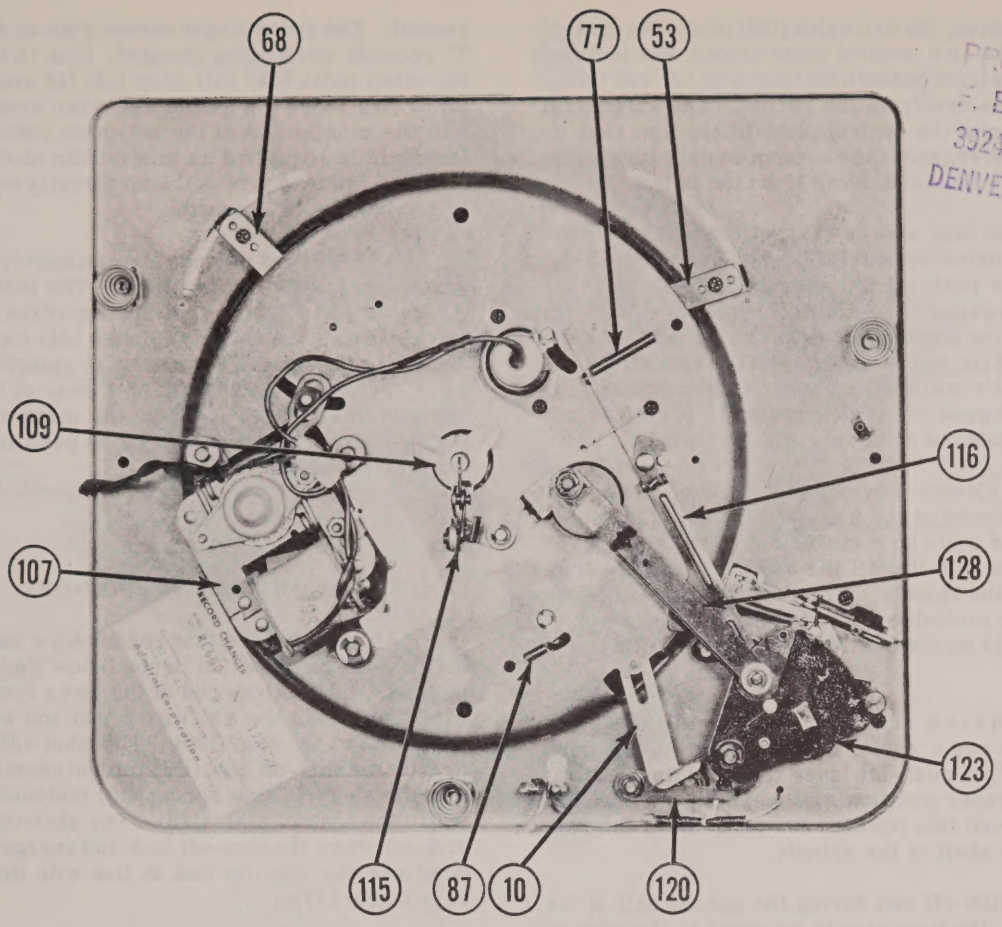

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Figure 3

CHANGE CYCLE

It is recommended that the change cycle operation be observed by rotating the turntable by hand. The action described below can then be readily followed and the function of each part more easily understood.

This mechanism is driven by the idler wheel (59) which rides against the inside rim of the turntable (1). The turntable speed is determined by the diameter of the shaft (either 78 RPM, 45 RPM, or 33 RPM) driving the idler wheel (59).

The 78 RPM drive shaft is part of the motor armature. The 33 RPM drive shaft (62) and the 45 RPM drive shaft (63) are moved in and out of position mechanically by the speed selector link (68).

The cycling mechanism is driven through its change cycle by means of the drive gear (19), which in turn, is driven by the geared hub of the turntable. When the mechanism is out of cycle, the "open space" on the drive gear is held next to the turntable hub by the gear indexing arm (20) and spring (21).

This mechanism utilizes what is commonly known as a velocity trip, which consists of two main parts: the trip motion arm (17) and the gear engagement pawl (15).

While a record is being played, the trip slider (10) is moved slowly by the stud on the tone arm control lever (100), which moves with the tone arm. The stud on the trip slider (10) rides against the trip motion arm (17), moving it very slightly. Since the gear engagement pawl (15) is held against the trip motion arm (17) by the trip friction washer (14), the gear engagement pawl (15) is also moved slightly toward the turntable hub. Since this movement is only slight, the vertical catch on the gear engagement pawl (15) is just touched and "kicked away" by the lug on the turntable hub. This occurs with each revolution of the turntable until the gear engagement pawl is moved in rapidly enough to be positioned in front of the lug before the next rotation of the turntable.

As the needle enters the eccentric trip groove of the record, the trip slider (10) is moved in rapidly by the tone arm. The gear engagement pawl (15) then moves in front of and engages the lug on the turntable hub. This causes the drive gear (19) to be rotated far enough so that the teeth on the drive gear will engage the teeth on the turntable hub, starting the change cycle.

The change cycle may also be actuated by sliding control pointer (50) to the "Rej." position momentarily. The stud on the end of the reject arm (53) moves the gear engagement pawl (15) into position to engage the lug on the turntable hub.

As the teeth on the turntable hub and drive gear (19) mesh, starting the rotation of the drive gear, the drive eccentric also rotates, since both parts are mounted on the same shaft. As the drive eccentric

rotates clockwise, the drive link (128) pivots the control plate (123). As the control plate pivots, the inclined cut-out moves from beneath the tone arm lift rod (101), raising the tone arm from the record. The safety arm (125) travels with the control plate (123). The stud on the safety arm engages the tone arm control lever (100) and moves the tone arm away from the spindle.

When the tone arm is clear of the turntable, the roller on the drive eccentric (81) engages the push-off link (86) The push-off link moves the push-off lever (115) which engages the push-off adjustment nut (114) on the end of the push-off shaft in the spindle. As the push-off link is moved by the drive eccentric, the push-off lever moves the push-off shaft up into the spindle. The push-off shaft engages the ejector and pushes it up and out at the shelf of the spindle.

As the ejector moves up, it engages the center hole of the record at the bottom of the stack on the shelf. As the ejector moves out of the spindle the record moves with it until the center hole is clear of the shelf on the spindle. The record drops down the spindle to the turntable. The balance of the stack of records is held on the shelf by the spindle slide above the ejector.

As the drive eccentric starts into the second half of the change cycle, the push-off return spring (113) returns the push-off lever (115) and the push-off link (86) to proper position and permits the push-off ejector to return into position for push-off of the next record on the shelf of the spindle.

After push-off and during the second half of the change cycle, the tone arm is returned to the edge of the record on the turntable. The tone arm is mounted to the tone arm control lever (100). The engagement spring (102) presses the tone arm control lever against the cork friction washer on the set-down arm (99). As the set-down arm return spring (98) draws the set-down arm toward the spindle, the cork friction washer returns the tone arm control lever with the set-down arm.

As the control plate (123) is returned by the drive link (128), the inclined cut-out moves beneath the tone arm lift rod (101). As the tone arm lift rod descends into the inclined cut-out, the tone arm is lowered to the record.

The set-down index (94) automatically determines the correct set-down position of the tone arm for each record size. An index finger with a stepped rubber cap (93) extends above the changer pan momentarily, during the change cycle, to determine the size of the record to be played.

If 7" records are being changed, the rubber cap (93) is free to move to its extreme upward position. This action allows the rear of the set-down index (94) to pivot downward of its own weight. When in this position, the index pin on the set-down arm (99) will travel to the front slot in the set-down index (94). Since the index pin is held in the front slot against moving further toward the spindle, the inward travel of the tone arm will stop directly over the lead-in groove of a 7" record.

A 10" record will extend past the edge of the turntable approximately 1/2 inch; the bottom step of the index finger cap (93) will contact the edge of the record. The index finger cannot rise as high as when 7" records were being changed, thus the rear of the set-down index (94) will drop just far enough so as to allow the index pin on the set-down arm (99) to ride into the middle slot of the set-down index. When the index pin is located in this middle slot the inward travel of the tone arm will stop directly over the lead-in groove of a 10" record.

A 12" record extends approximately 1 1/4 inches beyone the edge of the turntable. The index finger cap (93) rises just slightly since the top of the cap contacts the record. The set-down index (94) cannot lower enough to permit the index pin to enter either the 7" or 10" set-down slot. With the rear of the set-down index in this upward position, the index pin will enter the rear slot of the set-down index positioning the tone arm for 12" set-down.

AUTOMATIC SHUT-OFF

As soon as the last record has been dropped, the leveling arm (22) drops below the shelf on the spindle. The bottom end of the leveling arm shaft extends beneath the changer pan and will lower the shut-off delay stop (120). The shut-off link control arm on the shut-off link (116) is then permitted to pivot with the shut-off arm spring (119) fastened at its other end to the control plate (123). The shut-off link control arm will draw the shut-off link and engage its cam that positions the shut-off link in line with the stud on the reject arm (53).

As the shut-off link (116) is drawn toward the control plate (123), the stop on the shut-off link moves into the path of the stud on the tone arm control lever (100).

When the control plate (123) begins to return in the second half of the change cycle, a stud on the control plate moves the shut-off link (116) to snap off the phonograph motor switch (76) and return control pointer (50) to the "Off" position.

The tone arm control lever (100) is held by the tone arm stop on the shut-off link (116) while the control plate (123) is going through the second half of the change cycle; the tone arm is held suspended above the tone arm rest (46). As the inclined cut-out moves under the tone arm lift rod (101), the tone arm is lowered onto the tone arm rest.

ADJUSTMENTS

Height Adjustment-

If the height adjustment is correct, the needle of the tone arm should clear the base plate (74) by approximately 1/4" when the changer is out of cycle. In this position, the tone arm will clear a stack of 12 standard 10", 78 RPM records on the turntable and will clear the bottom of a record resting on the spindle shelf.

The tone arm height adjusting screw (30) is accessible through a hole on the top of the tone arm at the tone arm base. To raise the height of the tone arm, turn the adjusting screw clockwise.

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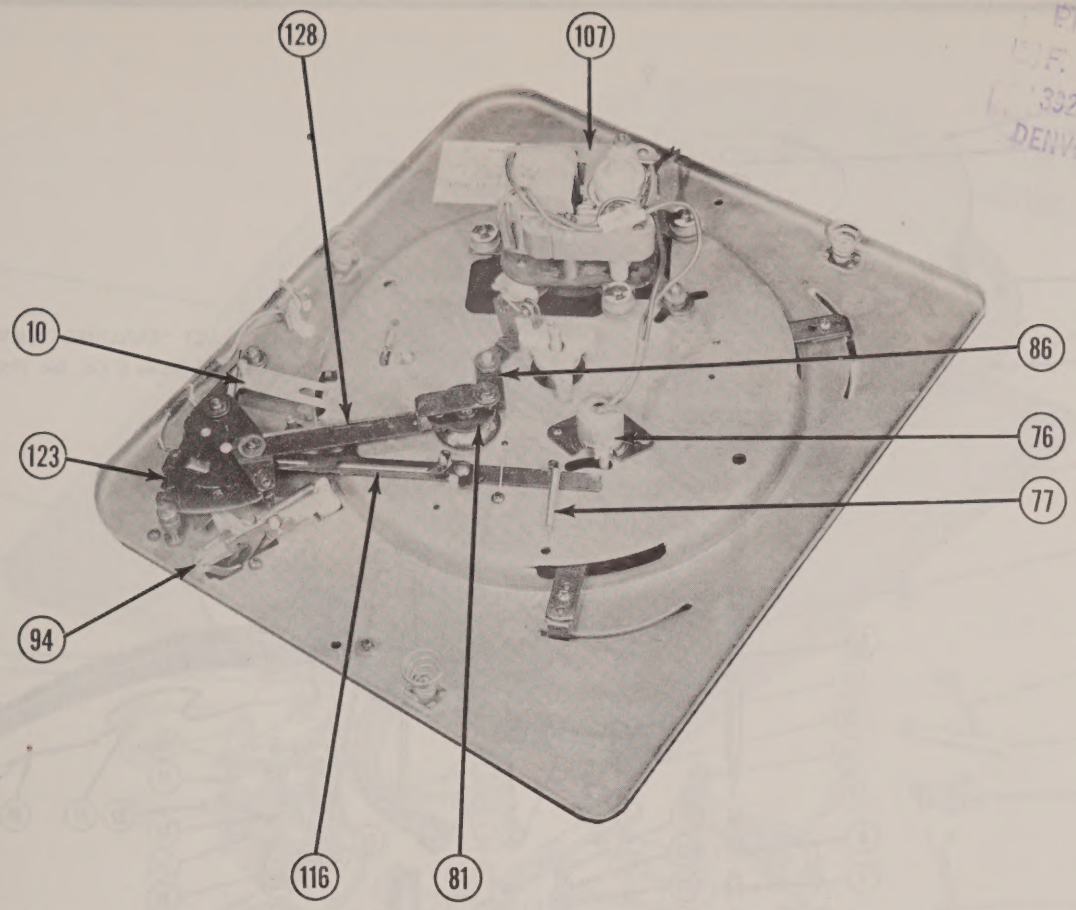

Figure 4

Set-Down Adjustment-

The tone arm will automatically set-down properly on 7" or 12" records if the set-down adjustment is made properly on a 10" record. The set-down adjustment screw (33) is accessable through the hole in the left side of the tone arm. Turning this screw out (counterclockwise) moves the arm closer to the spindle, and turning it in (clockwise) moves it away from the spindle.

Make the set-down adjustment as follows:

1. Grasp the leveling arm (22) at the shaft end and swing the arm to the right as far as possible.

2. Place a 10" record on the turntable.

3. Slide control pointer (50) to the "Rej." position and then return pointer to the "Off" position.

4. Rotate the turntable clockwise, by hand, until the tone arm starts its downward travel to the record.

5. Adjust the set-down adjustment screw (33) so that the needle will land in the lead in groove of the 10" record.

6. Check the set-down point with each size of record. "Touch-up" set-down adjustment until the set-down has been optimized for all record sizes.

Velocity Trip-

This changer used a velocity type trip, which depends upon a rapid movement of the tone arm toward the spindle in any area between 2 7/8" to 7/8" from the center of the record. This trip requires no adjustment. However, in order for the changer to trip properly, there must be sufficient friction between the trip motion arm (17) and the gear engagement pawl (15). Friction may be increased by placing a very slight amount of a silicone lubricant such as Cosmolube #1 on the fibre washer (16). If necessary, replace the trip friction washer (14).

Push-Off Adjustment-

The push off adjustment must be checked whenever the spindle has been removed or changed. Record push-off is accomplished by means of an ejector and push-off shaft built into the spindle. During change cycle, the ejector and push-off shaft are moved by the push-off lever (115). If ejector travel is not sufficient for record push-off, adjustment may be required.

Ejector travel is adjusted by the hexagonal adjustment nut (114). With proper push-off adjustment, the ejector should extend just slightly beyond the edge of the shelf on the spindle.

IMPORTANT: Additional travel must be allowed for the push-off shaft and ejector after the

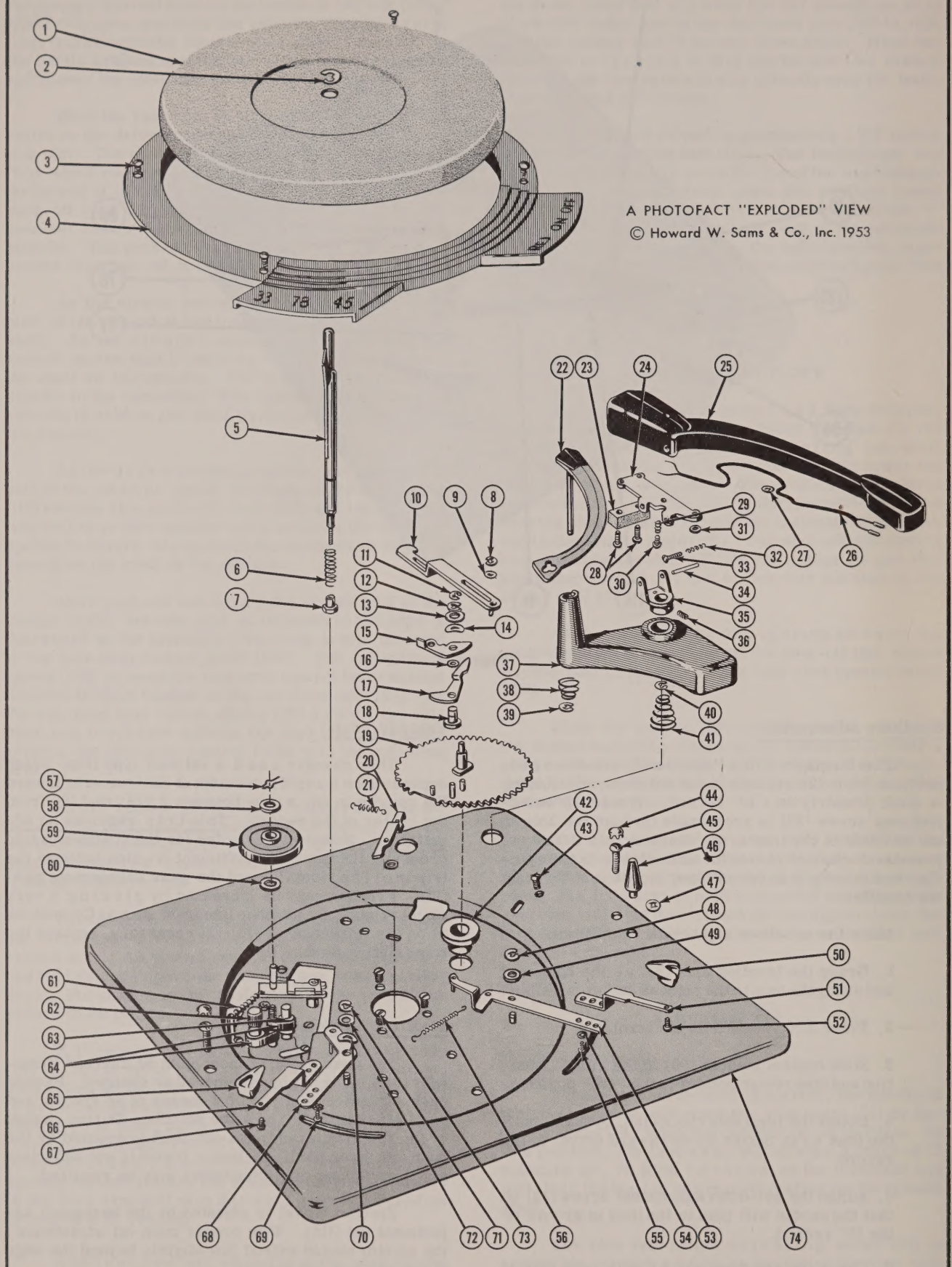

Figure 5A. Exploded View Of Parts Above Baseplate.

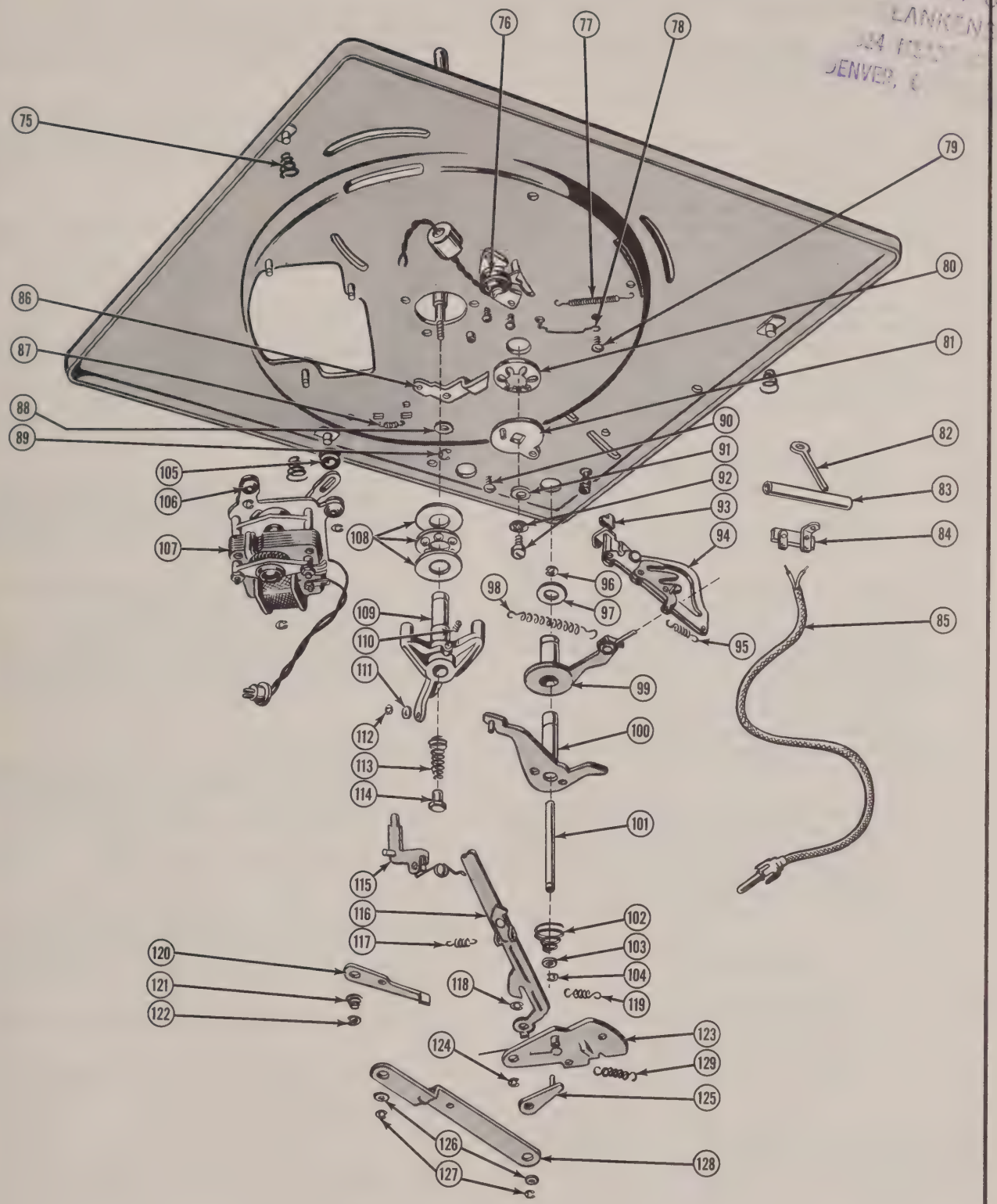

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Figure 5B. Exploded View Of Parts Below Baseplate.

push-off lever (115) has moved its full distance.

To adjust the push-off, proceed as follows:

1. Rotate the turntable by hand. Slide control pointer (50) to "Rej." position and let it return to the "On" position.

2. Continue rotating turntable slowly until the roller on the drive eccentric (81) engages the push-off link (86). Rotate the turntable until the roller has moved the link its full distance. The push-off lever (115) is now extended its maximum travel.

3. Check the position of the ejector at the shelf on the spindle. The ejector should extend just beyond the edge of the shelf. If the ejector does not extend beyond the edge of the shelf, turn the push-off adjustment nut (114) counterclockwise to increase the amount of push-off. Use a 1/4" open-end wrench for this adjustment.

CAUTION: The push-off adjustment nut has been specially slotted to stay tight on the push-off shaft after adjustment is made. Do not turn the nut all the way on the push-off shaft; this will spread the slots and allow the nut to turn out of adjustment.

4. Press the hexagonal adjustment nut (114) to check for additional travel before the push-off shaft stops. The ejector should move out past the shelf slightly more than necessary for push-off before it stops.

5. Slide a 15 thousandths of an inch (.015) feeler guage between the flat surface of the adjustment nut (114) and the push-off lever (115) to check and adjust until guage passes freely.

NOTE: The additional travel for the push-off shaft may vary. In order to obtain proper push-off, the clearance of 15 thousandths of an inch must not vary more than plus or minus 5 thousandths of an inch.

LUBRICATION

CAUTION: Do not apply grease or oil to the trip slider (10). Under normal operating conditions, the motor should never require lubricating. When lubricating the changer, keep oil or grease away from the turntable.

1. The shaft of the leveling arm (22) must be free of binding in its bearing in the tone arm base. Dry graphite powder should be used to lubricate the shaft; graphite oil or a light machine oil may be used as a substitute.

2. The turntable hub and the tone arm base should be lubricated with SAE No. 20 oil. Oil used here must be fluid in order that it may penetrate and be absorbed by the bearing material. Never use grease of any kind.

3. The pivot points on the set-down index (94) should not be lubricated. This assembly must be clean and dry at these points in order to pivot freely of its own weight.

Other points of movement throughout the record changer should be cleaned and lubricated with Cosmoluble #1 whenever the changer is serviced. A good automobile chassis lubricant may be used as a substitute.

Use carbon tetrachloride to remove any oil or grease which may be on the idler wheel tire, inside rim of the turntable, the rubber drive belts, or rubber grommets.

TROUBLES

Changer Fails To Trip-

1. Check the trip slider (10) to see if it moves freely.

2. Check the trip motion arm (17) and gear engagement pawl (15) to see if they are working properly. See "Velocity Trip".

3. Be sure there is no binding at the bearing in the tone arm base or between the shaft of the tone arm control lever (100) and the shaft of the set-down arm (99).

4. Check tension on trip friction washer (14). If necessary, replace with new washer.

5. Check for bent, loose or missing trip slider return spring on the control plate (123).

Continuous Tripping-

1. Check tension of gear indexing spring (21).

2. Check for bent trip slider return spring.

3. Check for bent trip slider (10).

Tone Arm Does Not Set-Down Properly-

1. Check set-down adjustment. See "Set-Down Adjustment".

2. Check for binding in set-down index assembly (94).

3. Check that the set-down index bracket properly interlocks with changer pan.

Tone Arm Skips Grooves On Records-

1. Be sure the grooves on records are clean and not damaged.

2. Check that record changer is level.

3. Check the condition of the needle in the pick-up cartridge; replace worn needles. Check that the needle is not twisted or bent out of shape.

4. Be sure there is no binding at the bearing in the tone arm base or between the shaft of the tone arm control lever (100) and the shaft of the set-down arm (99).

5. Check that the trip slider (10) is free of oil or grease and dirt; that the trip slider is not bent and is free of burrs.

6. Check for binding between the trip motion arm (17) and the gear engagement pawl (15). These parts must move without loading the trip slider (10).

Record "Squeak" On Turntable-

1. Be sure the records are free of label burrs folded into the center hole.

2. Remove any dirt on the surface of the spindle.

3. Place a few drops of light machine oil in a soft cloth and polish the spindle with this cloth.

Changer Causes Rumble Or Noise-

1. Be sure that the shipping screws on each side of the baseplate have been removed.

2. Check for any mechanical rub near the motor.

3. Check for broken float spring (75).

4. Be sure plastic escutcheon is securely held to changer pan by four mounting screws (3).

Records Do Not Push Off Or More Than One Record Drops To Turntable-

1. Check for broken or weak ejector return spring in the spindle.

2. Check for weak push-off return spring (113).

3. Check that no foreign material is between the record shelf and the ejector in the spindle.

Changer Trips Into Change Cycle Before Finishing Record-

1. Check for foreign material between trip motion arm (17) and gear engagement pawl (15).

2. Check for bent trip slider return spring.

3. Check for bent trip slider (10).

Records Fall To Turntable Unevenly-

1. Check that spindle is clean.

2. Check that push-off ejector operates freely.

3. Check the push-off adjustment.

Changer Stalls In Change Cycle-

1. Idler wheel (59) may have foreign material on it. Clean the idler wheel and turntable rim with carbon tetrachloride.

2. Motor drive belts (64) may be slipping. Clean with carbon tetrachloride or, if necessary, replace with new belts.

3. Check to see if push-off adjustment has proper clearance.

Changer Does Not Shut Off Automatically-

1. Check to be sure leveling arm shaft (22) is not catching on spindle shelf after last record is dropped.

2. Check tension in leveling arm return spring (38).

3. Check tension in shut-off delay stop engagement spring (121).

4. Check for binding of shut-off delay stop (120).

5. Check for binding of cam on shut-off link (116).

6. Check tension in shut-off arm spring (119).

Ref. No.	Part No.	Description
1	G400B602	Turntable
2	401A355-3	Retaining Ring
3	1A26-54-57	Screw (for mtg. item 4) #2 x 1/4
4	403D64	Plastic Escutcheon (Gold)
5	G400B601	Spindle Assy. (includes items 6 and 7)
6	405A142	Push-Off Shaft Return Spring
7	402A277	Push-Off Adjustment Nut
8	401A355-1	Retaining Ring
9	4B2-178-0	Flat Washer
10	G400A575	Trip Slider
11	401A355-6	Retaining Ring
12	401A355-1	Retaining Ring
13	4B2-178-0	Flat Washer
14	401A366	Trip Friction Washer
15	401A352	Gear Engagement Pawl
16	412A36	Fibre Washer
17	401A351-1	Trip Motion Arm
18	402A292	Trip Pivot Hub
19	G400A587	Drive Gear & Stud Assembly
20	G400A620	Gear Indexing Arm & Stud Assy.
21	405A147	Gear Indexing Spring
22	G400B625	Leveling Arm Assembly
23	404A40	Tone Arm Counterweight
24	G400A611	Tone Arm Mtg. & Pivot Plate Assembly
25	403C60	Tone Arm (does not include cartridge)
	409A13	Pickup Cartridge with Needle & Knurled Nut (Shure Bros.)
	409A13-1	Pickup Cartridge with Needle (Electro-Voice)
	409A13-2	Pickup Cartridge (export type) with Needle & Knurled Nut
	98A15-19	Needle for 409A13 Cartridge
	98A15-18	Needle for 408A13-1 Cartridge
	1A72-1-20	Cartridge Mtg. Screw Shake-proof Type 25 (2 req.)
26	G400A529-1	Tone Arm Lead & Pin Jack Assy.
27	2B10-5-59	Speed Nut
28	1A70-6-20	Counterweight Mtg. Screw, #4 x 5/8
29	405A148	Lift Adjusting Spring
30	402A290	Lift Adjusting Screw
31	2B10-5-59	Speed Nut
32	405A137	Set-Down Adjusting Lock Spring
33	45-750-C2-47	Set-Down Adjusting Screw, #4-40 x 3/4 BMS
34	414A46	Pivot Shaft
35	G400A610	Tone Arm Mount & Hub (includes item 36)
36	402A296	Allen Set Screw, #8-32 x 3/16
37	403C61	Tone Arm Plastic Base Assy. (includes bearings)
38	405A150	Leveling Arm Return Spring
39	401A355-3	Retaining Ring
40	401A396-5	Retaining Ring
41	405A149	Set-Down Pivot Retaining Spring
42	415A31	Drive Gear Bearing
43	760-187-C2-57	Screw, #6-32 x 3/16, BH (includes lockwasher)
44	13A-2-8-57	Snap-In Buttons
45	103-1750-F2-52	"Hold-Down" Screw, #10-32 x 1 3/4 (for shipping only)
46	403A65	Tone Arm Rest
47	2B10-40-59	Speed Nut, 3/16
48	401A355-1	Retaining Ring
49	401A388	Flat Washer
50	403A63	Plastic Control Pointer (Maroon)
51	401A385	Control Knob Lever
52	402A342	Control Knob Mtg. Screw, #4 x 1/4 PHST
53	G400A608	Switch & Reject Arm Assy.
54		Lockwasher (part of item 55)
55	760-187-C2-57	Screw, #6-32 x 3/16, BH (includes item 54)
56	405A140	Reject Arm Return Spring
57	405A15	Idler Wheel Retaining Clip
58	412A30	Fibre Washer
59	G400A279	Idler Wheel Assembly
60	412A30	Fibre Washer
61	98A-15-20	Idler Wheel Spring
62	98A15-10	33 RPM Drive Shaft (60 cycles)
63	98A15-11	45 RPM Drive Shaft (60 cycles)
64	406A20	Drive Belt (2 req.)
65	403A63	Plastic Control Pointer (Maroon)
66	401A385	Control Knob Lever
67	402A342	Control Knob Mtg. Screw, #4 x 1/4 PHST
68	G400A607	Speed Selector Link Assy.
69	760-187-C2-57	Screw, #6-32 x 3/16, BH (includes lockwasher)
70	4A5-19-0	Spring Washer
71	401A388	Flat Washer
72	401A355-1	Retaining Ring
73	1A70-10-47	Screw, Self-tapping, #6 x 3/8
74	G400D627-1	Changer Pan Assembly
75	19A10-3	Float Spring, 7/8" high
	405A139	Float Spring, 3/4" high
76	G400A606	Switch & Mtg. Plate Assembly
77	405A140	Shut-Off Link Return Spring
78	414A49	Shut-Off Link Hold-Down
79	1A27-53-47	Screw, Self-tapping, #6 x 3/16
80	405A99	Retaining Ring
81	G400A605	Drive Eccentric Assembly
82	9A8-2	Tone Arm Lead Clamp
83	96B18-8-10-0	Plastic Tubing, 1 1/2"
84	10B1-18	Terminal Board
85	413A11-1	Audio Cable, 15" (includes plug)
86	401A379	Push-Off Link
87	405A147	Gear Indexing Spring
88	401A388	Flat Washer
89	401A355-1	Retaining Ring
90	402A263	Screw, Self-tapping, #6 x 5/8
91	401A388	Flat Washer
92	285-250-C2-47	Screw, #8-32 x 1/4 BH (includes lockwasher)
93	406A27	Index Finger Rubber Cap
94	G400A618	Set-Down Index Assembly
95	405A143	Set-Down Index Return Spring
96	401A396-4	Retaining Ring
97	415A34	Spacer Washer
98	405A146	Set-Down Arm Return Spring
99	G400A616	Set-Down Arm Assembly
100	F400A615	Tone Arm Control Lever and Shaft Assembly
101	402A284	Lift Rod

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
102	405A144	Engagement Spring	113	405A142	Push-Off Shaft Return Spring
103	4B1-67-47	Washer (.196 x 5/16 x 1/32)	114	402A277	Push-Off Adjustment Nut
104	401A355-1	Retaining Ring	115	G400A603	Push-Off Lever & Stud Assy.
105	406A24	Speed Selector Link Grommet	116	G400A629	Shut-Off Link & Arm Assy.
106	406A19	Motor Grommet	117	405A152	Cam Return Spring
107	*407C20	3-Speed Motor Complete, 117V., 60 cycles	118	401A355-7	Retaining Ring
	407C20-1	3-Speed Motor Complete, 117V., 50 cycles	119	405A151	Shut-Off Arm Spring
	407X20-4	3-Speed Motor Complete, 230V., 50 cycles	120	401A398	Shut-Off Delay Stop
			121	405A153	Shut-Off Delay Stop Engagement Spring
108	415A29	Turntable Thrust Bearing	122	401A355-1	Retaining Ring
109	404B41	Turntable Hub Support & Shaft (less Allen set screw)	123	G400A621	Control Plate Assembly
			124	401A355-2	Retaining Ring
110	402A296	Allen Set Screw, #8-32 x 3/16	125	G400A622	Safety Arm & Stud Assembly
111	4B1-68-47	Washer (.196 x 3/8 x 1/32)	126	401A388	Flat Washer
112	401A355-1	Retaining Ring	127	401A355-1	Retaining Ring
			128	401A375	Drive Link
			129	405A145	Safety Spring

Parts For Converting 407C20 Motor For 50 Cycles

78RPM Drive Shaft Spring (50 cycles)- - - - 405A113
45RPM Drive Shaft (50 cycles)- - - - - - - - 98A15-15
33RPM Drive Shaft Spring (50 cycles)- - - - 405A112

* 407C20 motor is not used on "Canadian Admiral" changers. For Canadian Admiral Replacement motors order:

60 cycle, 105 to 125 volts- - - - - - - - - - 407Y20-60

60 cycle, 105 to 125 volts- - - - - - - - - - 407Y20-60
25 cycle, 105 to 125 volts- - - - - - - - - - 407Y20-25

AIRLINE
MODELS 35GSL-3064A, B, 35GSL-3083A, B

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MODEL 35GSL-3083B

AIRLINE
MODELS 35GSL-3064A, B, 35GSL-3083A, B

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AIRLINE MODELS 35GSL-3064A, B, 35GSL-3083A, B

AIRLINE MODEL 35GSL-3083B

TRADE NAME	Airline Models 35GSL-3064A, 35GSL-3064B, 35GSL-3083A, 35GSL-3083B
SUPPLIER	Montgomery Ward, 619 Chicago Ave., Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.46 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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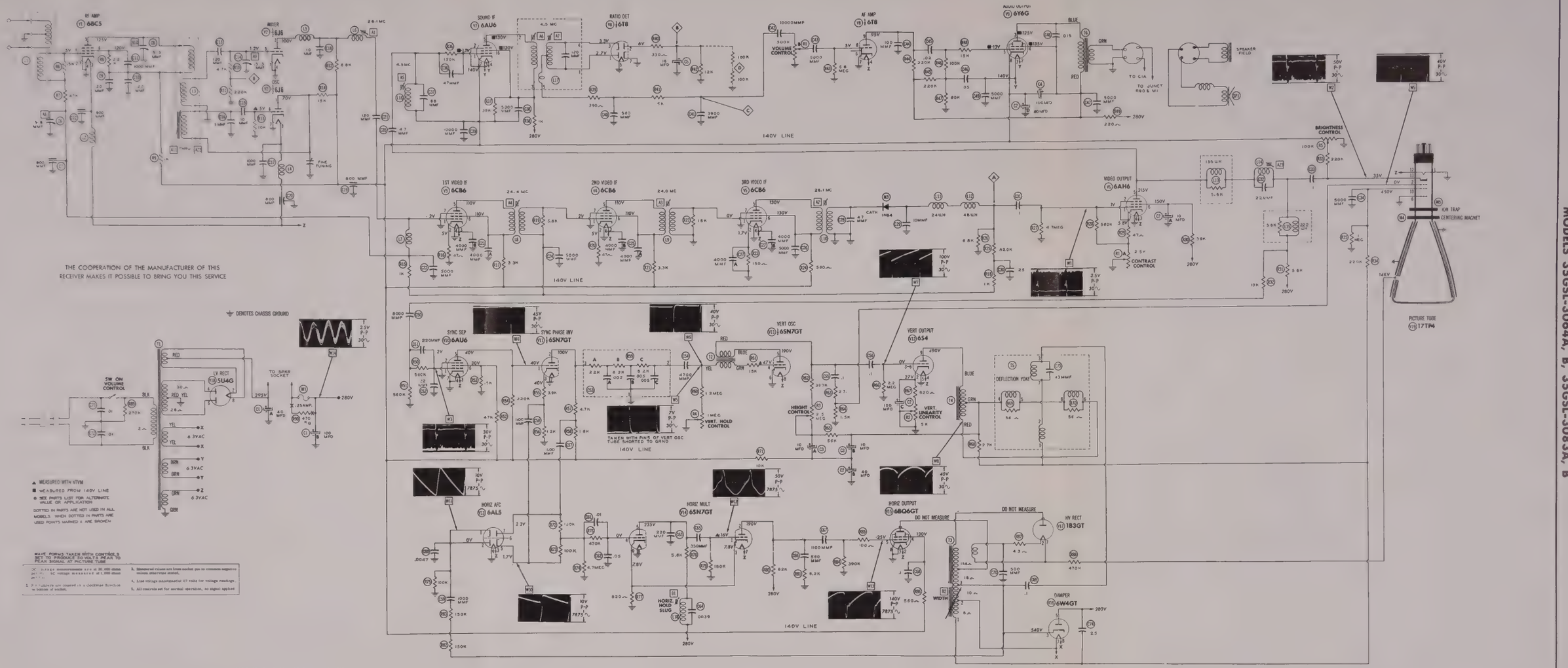
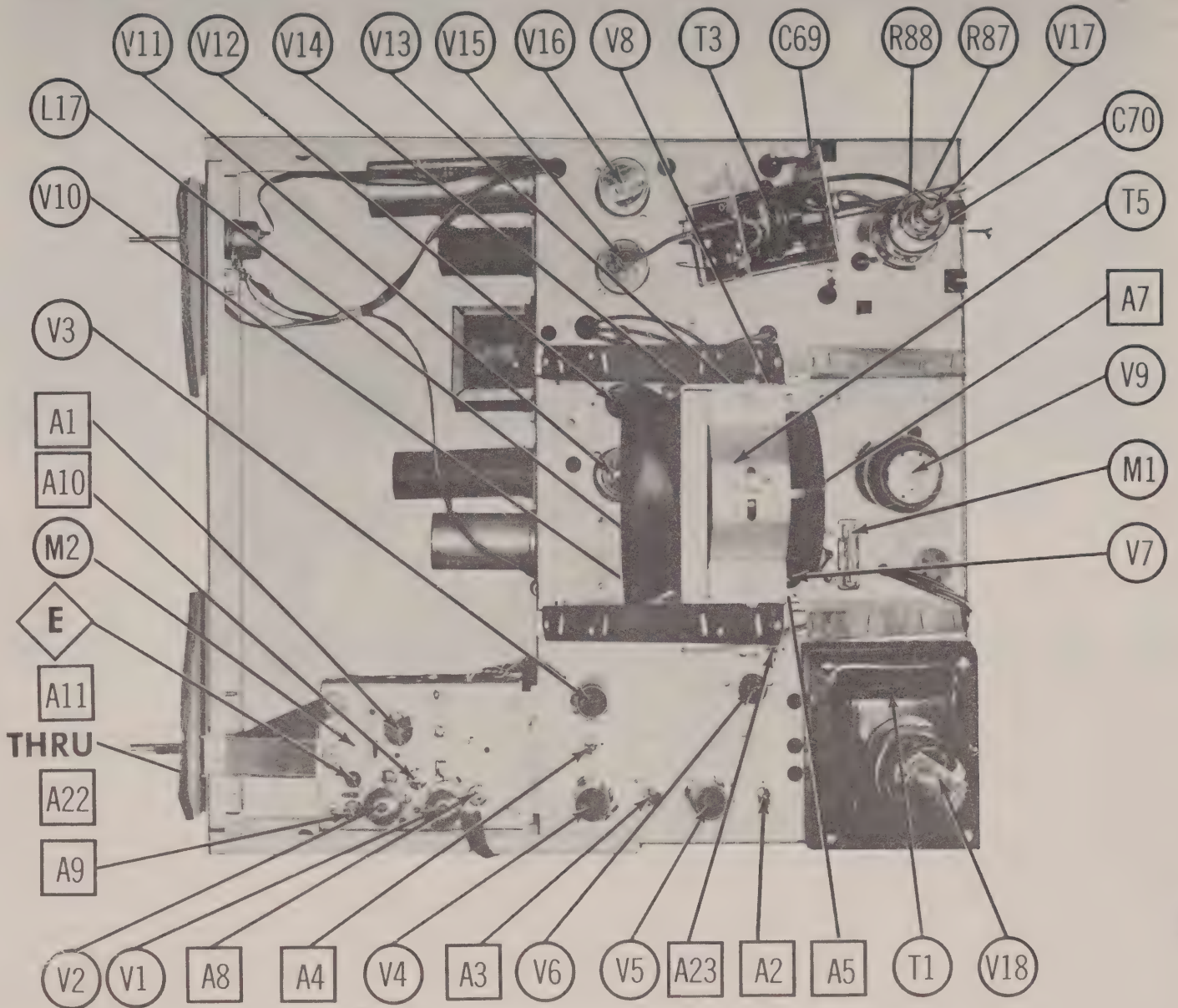


AIRLINE
MODELS 35GSL-3064A, B, 35GSL-3083A, B



CHASSIS TOP VIEW

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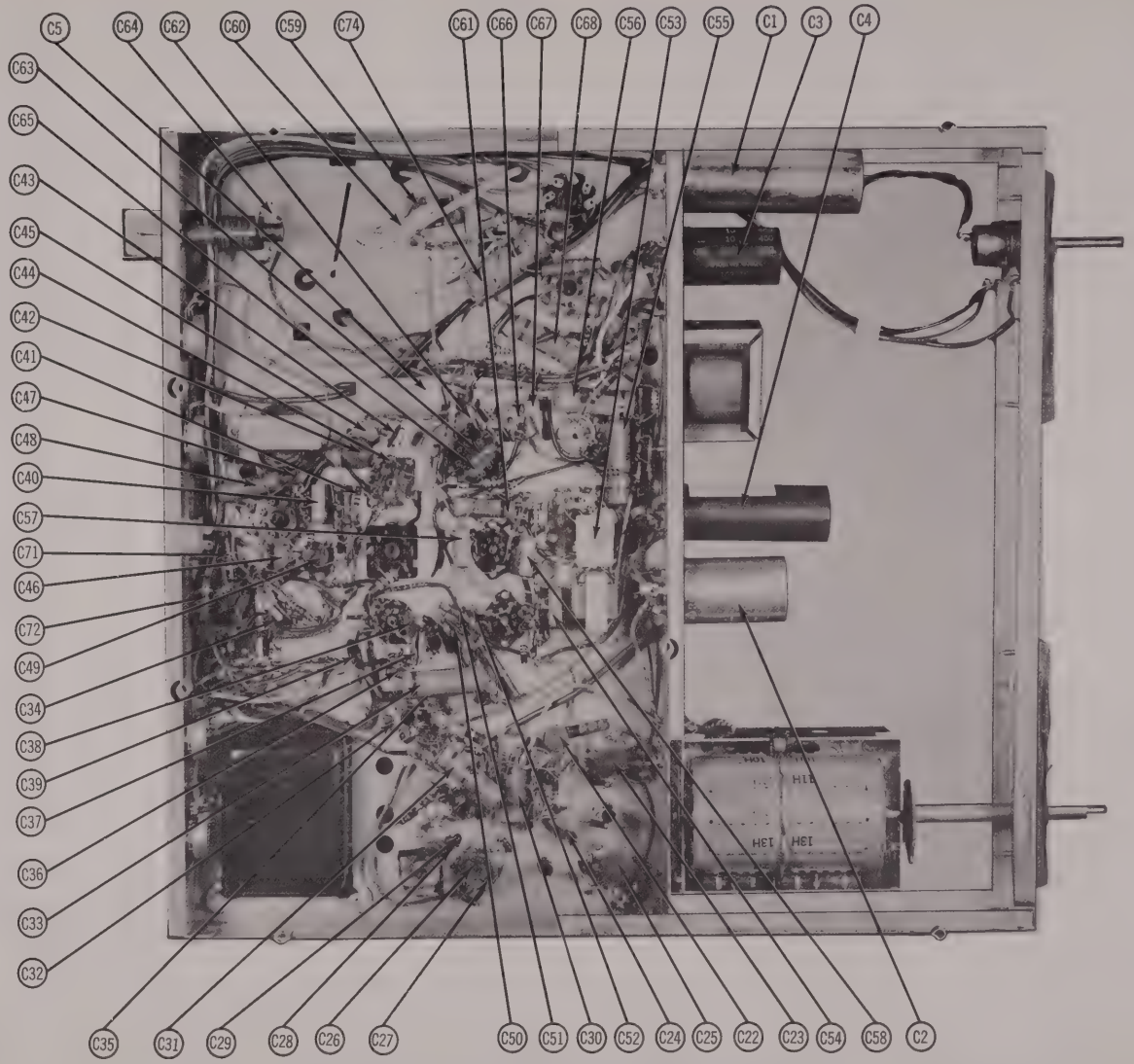

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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TUBE PLACEMENT CHART

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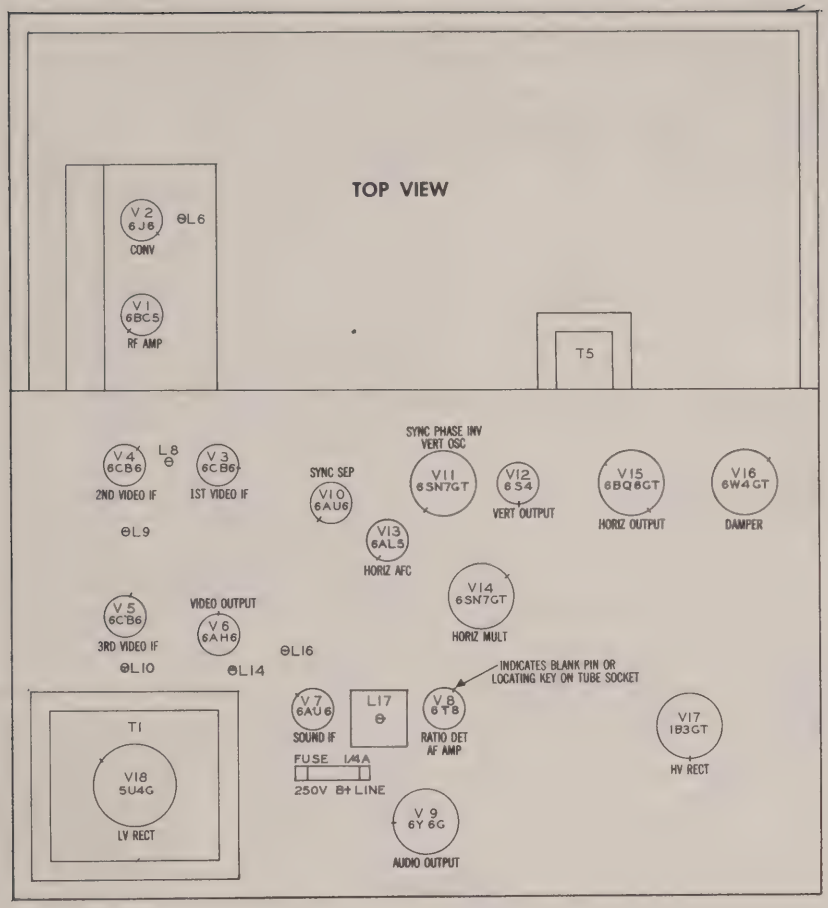


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V18, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V 6, V9
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V19
Has pic, no sound - V7, V8, V9

SYNC FAILURE
No vert. sync - V11, V12
No horiz. sync - V11, V13, V14
No vert. or horiz. sync - V10, V11

SWEEP FAILURE
No raster, has sound - V14, V15, V16, V17, V19
No vertical deflection - V11, V12
Poor vert. linearity or foldover - V11, V12
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V17, V18
Vert. off freq. - V11, V12
Horiz. off freq. - V11, V13, V14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative side of a 4.5 volt battery to the junction of C30 and R25. Connect the positive side to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	26.1MC	Any not used	Use VTVM. DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain less than 2 volt reading.
2.	"	"	"	24MC	"	"	A3	"
3.	"	"	"	24.4MC	"	"	A4	"
4.	"	"	25MC (10MC Swp)	26.1MC	"	Vert. Amp. of scope to point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to Fig. 1. If necessary, retouch A1 thru A4.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point B to chassis. The junction of these two resistors is alignment point D as shown on the schematic.
Short antenna terminals to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A5, A6	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (C). Common to point (D).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Short antenna terminals to chassis.
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to point A. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A5, A6	Disconnect stabilizing capacitor C5. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
6.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A7	Reconnect stabilizing capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Remove dummy converter tube and replace original 6J6 in its socket.
Ground AGC line at junction of C22 and R15.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (E). Low side to chassis.	A8, A9, A10	Adjust for maximum response as in Fig. 4. If markers fall below 70% on any channel retouch A8, A9, A10 and recheck all channels.
8.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

Remove AGC ground at junction of C22 and R15.
Connect the negative side of a 4.5 volt battery to the junction of C30 and R25. Connect the positive side to chassis.
Set the fine tuning control to the mid-position of its range.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	All	Adjust to place sound marker as in Fig.5. Video marker should be at 50%.
10.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"	A12	"
			201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A19	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A20	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A22	

4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust the fine tuning until sound bars just appear in the picture.
Starting from extreme counter clockwise position adjust A23 in a clockwise direction for minimum sound indication in picture.

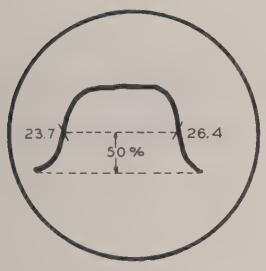


FIG. 1

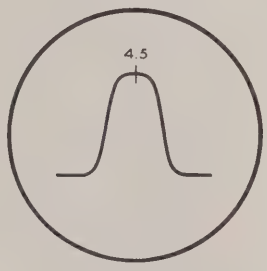


FIG. 2

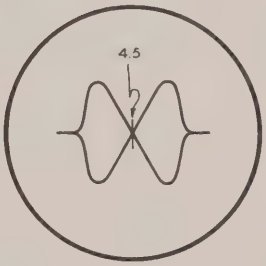


FIG. 3

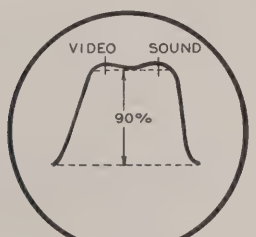


FIG. 4

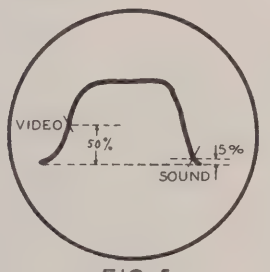
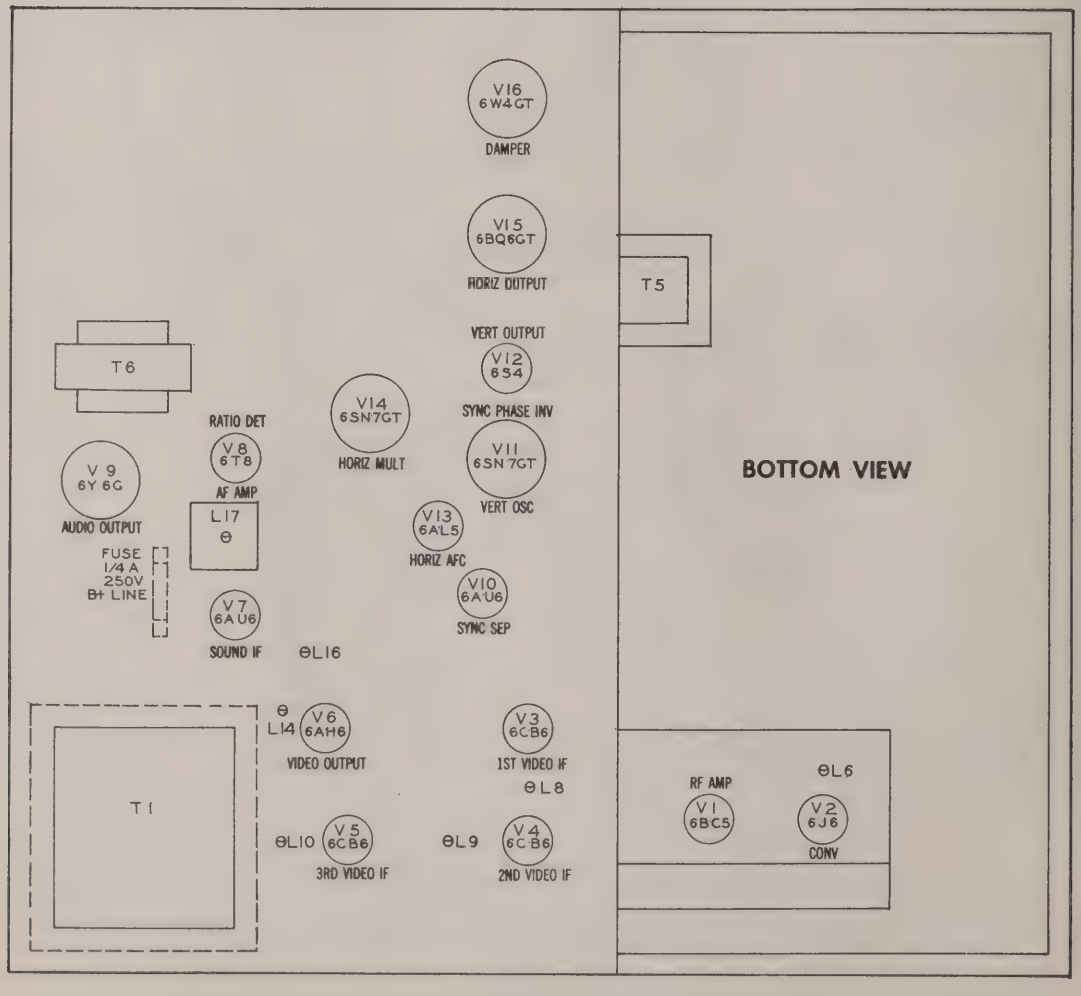


FIG. 5

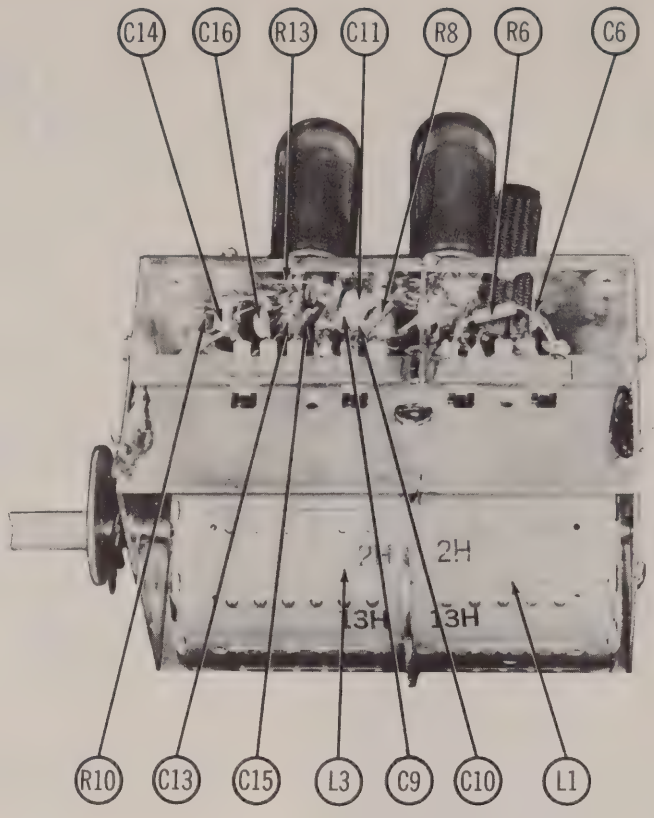
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	875KΩ	0Ω	.1Ω	0Ω	ǂ 1KΩ	ǂ 3. 2KΩ	0Ω		
V 2	6J6	ǂ 15KΩ	ǂ 6. 8KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	825KΩ	47Ω	.1Ω	0Ω	ǂ 3. 3KΩ	ǂ 3. 3KΩ	0Ω		
V 4	6CB6	825KΩ	47Ω	.1Ω	0Ω	ǂ 3. 3KΩ	ǂ 3. 3KΩ	0Ω		
V 5	6CB6	.3Ω	150Ω	.1Ω	0Ω	ǂ 560Ω	ǂ 560Ω	0Ω		
V 6	6AH6	500KΩ	350Ω	.1Ω	0Ω	† 5. 7KΩ	† 39KΩ	350Ω		
V 7	6AU6	ǂ 150KΩ	ǂ 0Ω	ǂ 0Ω	ǂ .2Ω	† 1. 1KΩ	† 1. 1KΩ	ǂ 0Ω		
V 8	6T8	INF	12KΩ	INF	.1Ω	0Ω	INF	0Ω	6. 8Meg	† 220KΩ
V 9	6Y6G	INF	ǂ .2Ω	†470Ω	† 300Ω	210KΩ	† 200KΩ	ǂ 0Ω	30KΩ	
V 10	6AU6	1. 1 Meg	0Ω	.1Ω	0Ω	ǂ 220KΩ	ǂ 47KΩ	0Ω		
V 11	6SN7GT	ǂ 220KΩ	ǂ 6. 5KΩ	5. 1KΩ	1. 4 Meg	■ 1. 1Meg	0Ω	0Ω	.1Ω	
V 12	6S4	INF	3. 2KΩ	2. 2Meg	.1Ω	0Ω	2. 2 Meg	INF	INF	■ 2. 7KΩ
V 13	6AL5	100KΩ	100KΩ	.1Ω	0Ω	4. 8 Meg	INF	4. 8 Meg		
V 14	6SN7GT	180KΩ	†82KΩ	820Ω	5. 1 Meg	† 5. 7KΩ	820Ω	.1Ω	0Ω	
V 15	6BQ6GT	INF	.1Ω	INF	ǂ560Ω	390KΩ	INF	0Ω	0Ω	TOP CAP ■18Ω
V 16	6W4GT	INF	INF	400KΩ	INF	†81Ω	INF	■10Ω	■10. 5Ω	
V 17	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ■174Ω
V 18	5U4G	INF	35KΩ	INF	29. 8Ω	INF	27. 6Ω	INF	35KΩ	
V 19	17TP4	0Ω	1. 5KΩ	Pin 6 0Ω	Pin 10 ■220KΩ	Pin 11 230KΩ	Pin 12 .1Ω			

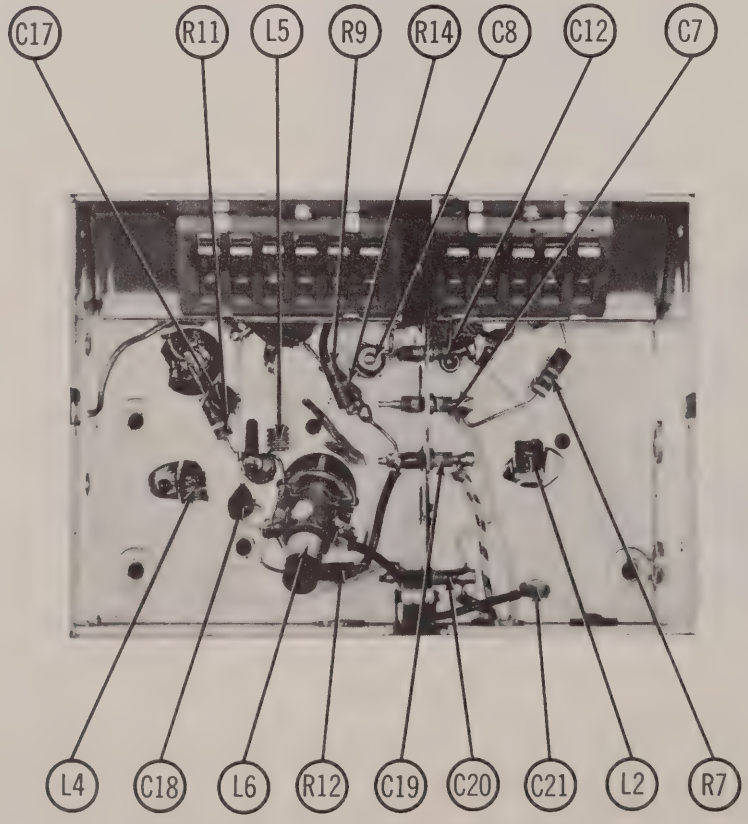
† MEASURED FROM JUNCTION OF C1A AND SPEAKER SOCKET.
ǂ MEASURED FROM 140VDC LINE
■ MEASURED FROM PIN 3 OF V16.



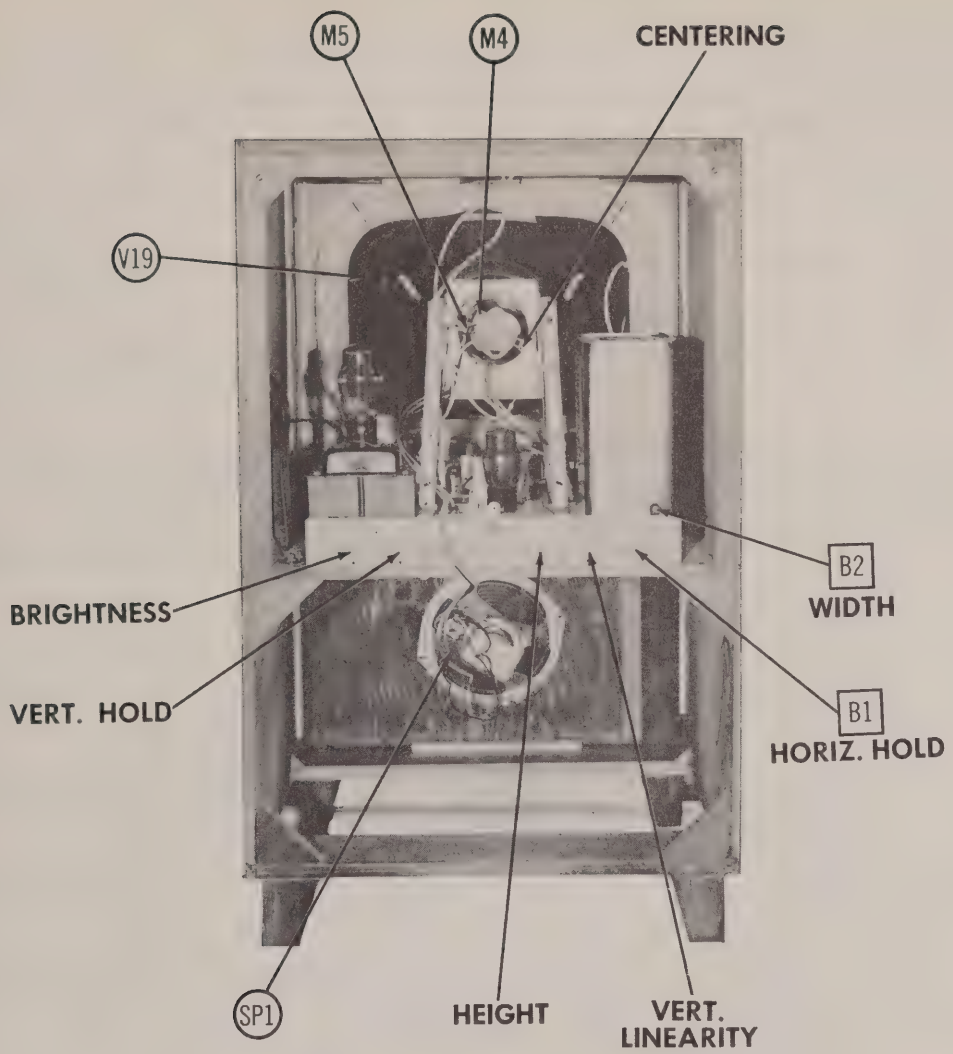
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV signal, preferably a test pattern.

Adjust the horizontal hold slug (B1) until the picture synchronizes horizontally and make any further adjustment of B1 necessary to set it to the middle of its range of synchronization.

Adjust the width slug(B2) for picture slightly wider than necessary to fill the picture mask horizontally.

Adjustment of B2 may affect the vertical size slightly.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V14, V15, V16 and V18. Check adjustment of width (B2). Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check C69, C74, T3, T5A, C68 and other associated components.	Check C66, C67 and other associated circuit components.

DRIVE LINES

Check, by substitution V14, V15 and V16. Check C66, C67, C68, C69, C74, T3, T5A and other associated circuit components.

COMPRESSED LEFT SIDE

Check, by substitution, V14, V15 and V16. Check adjustment of width (B2). Check T3, T5A, C69, C74, C68 and other associated components.

FOLDS

Check by substitution V14, V15 and V16. Check T3, T5A and Boost B+ filter, C74.

XMAS TREE EFFECT

Check V14, by substitution. Check C63, C64 and C65. Check L18.

VERTICAL

LOSS OF SWEEP

Check by substitution V11 and V12. Check waveform at W7.

If Satisfactory	If Unsatisfactory
Check T4, T5B, R67, R2 and other associated components.	Check T2, C55, C56 and other associated components.

INSUFFICIENT SWEEP

Check, by substitution, V11 and V12. Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check, by substitution, V11 and V12. Check adjustment of height and vertical linearity controls. Recenter raster if necessary. Check C55, C56, C2C, T4 and other associated components.

COMPRESSED AT TOP

Check by substitution, V11 and V12. Check adjustment of height and vertical linearity controls. Recenter raster if necessary. Check T4, T5B, C2C and other associated components.

FOLDS

Check by substitution V11 and V12. Check C55, C56 and other associated circuit components.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V13 and V14. Check waveform at W10.

If Satisfactory	If Unsatisfactory
Check C59, C60, R82, R83 and other associated components.	Check C58 and other components associated with V11A.

CRITICAL HOLD

Check by substitution V10, V11, V13 and V14. Proceed as outlined under "Loss of Sync".

PULLING PICTURE

Substitute V13, V14 and V15. Check AFC filter network. Check signal at W3 for signal overload, sync compression of 60 cycle modulation. Check components of stage where distortion occurs.

VERTICAL

LOSS OF SYNC

Check by substitution V10 and V11. Check C54, C53, T2, C50, C51 and other associated components.

CRITICAL HOLD

Check by substitution V10 and V11. Check components associated with V11B for change of value. Proceed as outlined under "Loss of Syn c".

TRIGGERING

Check by substitution V10, V11 and V12. Check circuit near these stages for filament lead dress.

VIDEO

LOSS OF VIDEO

Check C33, R33, R5, picture tube and other associated circuit components.

SOUND BARS

Check adjustment of local oscillator. Check 4.5MC trap adjustment (A23). Check video IF alignment.

NEGATIVE PICTURE

Check, by substitution, V6. Check vodeo detector crystal and assembly. Check components associated with video detector and output stages for change of value. Check picture tube. Check AGC network for component failure, check video IF stages for weak tubes and for component failure.

POOR CONTRAST

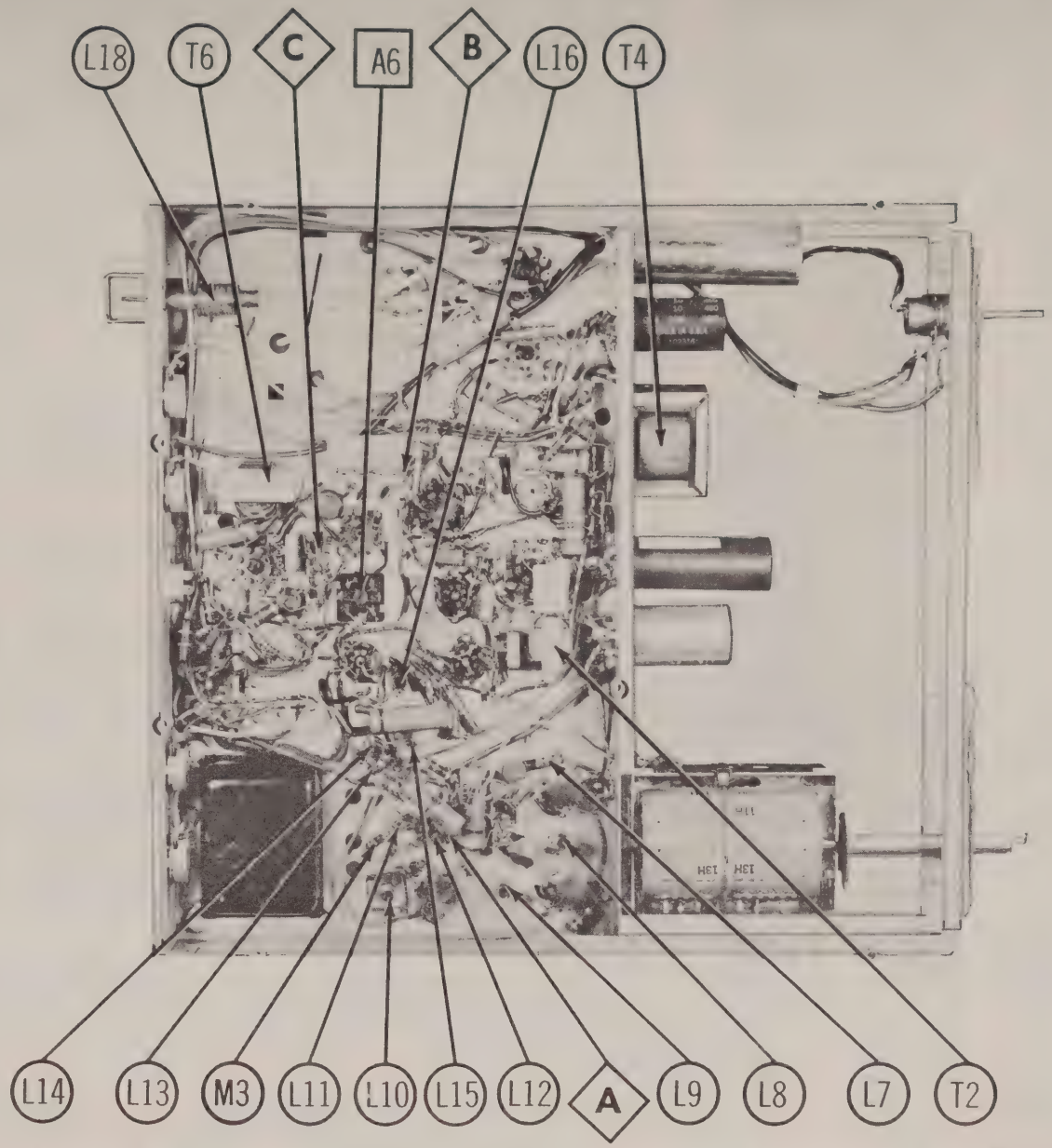
Substitute V6. Check video detector assembly. Check associated circuit components. Check picture tube.

SMEAR

Substitute V6. Check video detector assembly. Check C31 and C33. Check R27, R28, R30 and R31 for change of value. Check L13 and L15. Check picture tube and other associated components.

ONE WIDE BLACK BAR ACROSS PICTURE

Check tuner, video IF and video amplifier tubes for heater to cathode leakage.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6AH6	6AH6	7BK	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V9	Audio Output	6Y8G	6Y8G	7S	
V10	Sync Separator	6AU6	6AU6	7BK	
V11	Sync Phase Inv.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V12	Vert. Output	6S4	6S4	9AC	
V13	Horiz. AFC	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V16	Damper	5W4GT	5W4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: GENERAL ELECTRIC PART No.	RTMA BASE TYPE	NOTES
V19	17TP4	17TP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	▲40	400	N-8969	AFH3-46		CO37		FP378	TVL-3792	
B	▲100	400								
C2A	10	400	N-8967	AFH4-130		D101		FP453	TVL-4700	
B	▲40	200								
C	▲100	50								
D	▲80	200								
C3A	▲10	450	N-8039	AFH2-47		BO37		FP331	TVL-2750	
B	▲10	450								
C4	100	200	N-8970	AFH1-36		A035		FP137 TC59	TVL-1535	
C5	16	50	N-5912	PRS150/16		BBR16-90T		TC44	TVA-1409	
C6	3-8		N-9395		929-10					
C7	800		N-9409	CN-1-001	MFT-1000				503C-D1	
C8	.5-3		N-9396		829-3			CT56A	5GA-T12	
C9	120			BPD-00012	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C10	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C11	1000		N-9414	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C12	800		N-9409	CN-1-001	MFT-1000				503C-D1	
C13	800		N-9411	BPD-00012	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C14	.5-3		N-9397		829-3			CT56A		
C15	10		N-9413	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C16	5		N-9412							
C17	1000		N-9414	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C18	10		N-9413	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C19	800		N-9409	CN-1-001	MFT-1000				503C-D1	
C20	800		N-9409	CN-1-001	MFT-1000				503C-D1	
C21	120		N-9411	BPD-00012	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C22	5000		N-8272	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C23A	4000		N-7774	BPD-2X004	{D6-402 / D6-402}	TM5ED4	822-004	DCD-524	5HK-ED4	
B	4000				D6-402					
C24	5000		N-8272	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C25A	4000		N-7774	BPD-2X004	{D6-402 / D6-402}	TM5ED4	822-004	DCD-524	5HK-ED4	
B	4000				D6-402					
C26	5000		N-8272	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C27A	4000		N-7774	BPD-2X004	{D6-402 / D6-402}	TM5ED4	822-004	DCD-524	5HK-ED4	
B	4000				D6-402					
C28	4.7		N-9947	SI4.7NP0	TCZ-4.7		NP0K-4R7	ZT-555	5TCCB-V47	
C29	10		N-9048	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C30	.25	200	N-1479	P288-25		P2ZP25		PT402S	2TM-P25	
C31	.1	200	N-1351	P288-1	DF-104	P2ZP1		PT401	2TM-P1	
C32	22		N-9049	SI22NP0	TCZ-22		NP0K-220	ZT-5422	5TCC-Q22	
C33	.1	400	N-1523	P488-1	DF-104	PTF4P1		PT401	4TM-P1	
C34	5000		N-8272	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	4.7		N-9947	SI4.7NP0	TCZ-4.7		NP0-4R7	ZT-555	5TCCB-V47	
C36	47		N-9050	SI47NP0	TCZ-47		NP0K-470	ZT-5447	5TCC-Q47	
C37	68		N-9051	SI68NP0	TCZ-68		NP0L-680	ZT-5468	5TCC-Q68	
C38	5000		N-8272	BPD-005	MD-503	TM5D5	811-005	DC-525	5HK-D5	
C39	10000		N-9062	BPD-01	DD-103	TM5E1	811-01	DC-511	5HK-S1	
C40	560	500	N-7780							
C41	3900		N-9058							
C42	10000		N-9062	BPD-01	DD-103	TM5E1	811-01	DC-511	5HK-S1	
C43	5000		N-8272	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	100		N-9054	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C45	.02	400	N-1346	P488-02	DF-203	PTF4S3		PT402	4TM-S3	
C46	.05	200	N-1345	P288-05	DF-503	PTF2S		PT415	2TM-S5	
C47	5000		N-8272	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C48	.015	600	N-9046	P688-015		PTM6S15		PT615	6TM-S15	
C49	5000		N-8272	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C50	5000		N-8272	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C51	220		N-9055	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C52	22		N-9049	SI22NP0	TCZ-22		NP0K-220	ZT-5422	5TCC-Q22	
C53A	.002			P688-002		PTE6D2		PT622		
B	.005		⊕N-8042	P688-005	⊕PC-100	PTE6D5	⊕1405-01	PT625	⊕10IC1	
C	.005			P688-005		PTE6D5		PT625		
C54	4700	500	N-8893	1484-005		1DR5D5		MCB465	MS-25	
C55	.1	600	N-1523	P488-1	DF-104	PTE4P1		PT601	6TM-P1	
C56	.1	400	N-1523	P488-1	DF-104	PTF4P1		PT401	4TM-P1	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C57	1100	500	N-7783							
C58	1100	500	N-7783							
C59	1000	500	N-9068	1464-001		1RSD1		MCB255	MS-21	
C60	.0047	600	N-9061	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C61	.01	600	N-1344	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C62	.05	200	N-1345	P288-05	DF-503	PJF5S		PT415	2TM-S5	
C63	220	500	N-9054							
C64	.0039	600	N-9060	1464-004		1DR5D4		MCB463	MS-24	
C65	330	500	N-9056							
C66	560	500	N-9057							
C67	1100	500	N-7783							
C68	.1	200	N-1351	P288-1	DF-104	PJF1P1		PT401	2TM-P1	
C69	.1	200	N-1351	P288-1	DF-104	PJF1P1		PT401	2TM-P1	
C70	500	20000	N-8041	HV20C	TV3-502	MM-C20TS	413-501	HV30035A	20DE-T5	
C71	.01	400		489ZX-01		PJF6S1		PT611	4TM-S1	Note 1
C72	.01	400		489ZX-01		PJF6S1		PT611	4TM-S1	Note 1
C73	43	2000	N-9052							
C74	.25	400	N-2879	P488-25		PTE4P25		PT4025	4TM-P25	

Note 1. Some Models combine C72 and C71 in one unit.
⊕ Items C53A, C53B, C53C, R59A, R59B, R59C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	2500Ω	½	N-8942				WF-232	Contrast-Panel
B	500KΩ	½					UR-55A	Volume-Rear
C	Switch						UR-26	Attach to R1B
R2A	5000Ω	½	N-8945	Q1L-114	AG-19-S	AB-10	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R2A
R3A	2.5Meg	½	N-8971	Q1L-239	AG-84-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R3A
R4A	1Meg	½	N-8943	Q1L-137	AG-81-S	AB-89	SU-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R4A
R5A	100KΩ	½	N-8944	Q1L-128	AG-49-S	AB-40	SU-41	Brightness
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R5A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6	1MΩ	½	N-5424	BTS-15K	
R7	47KΩ	½	N-7124		
R8	2200Ω	½	N-5080	BTS-2200	
R9	1000Ω	½	N-4987	BTS-1000	
R10	4700Ω	½	N-5350	BTS-4700	
R11	220KΩ	½	N-4899		
R12	4650Ω	5%	N-4650		
R13	10KΩ	½	N-4578		
R14	15KΩ	½	N-5424	BTS-15K	
R15	1000Ω	1	N-3341	BTS-1000	
R16	47Ω	1	N-6237		
R17	3300Ω	1	N-7793	BTA-3300	
R18	1000Ω	1	N-3341	BTS-1000	
R19	5600Ω	½	N-7400		
R20	47Ω	1	N-6237		
R21	3300Ω	1	N-7793	BTA-3300	
R22	15KΩ	½	N-5424		
R23	150Ω	½	N-3663	BTS-150	
R24	900Ω	½	N-4280	BTS-560	
R25	820KΩ	½	N-4469	BTS-820K	
R26	680Ω	½	N-4630	BTS-6800	
R27	4.7Meg	½	N-4081	BTS-4.7Meg	
R28	560KΩ	½	N-7790	BTS-560K	
R29	47Ω	1	N-6237		
R30	39KΩ	1	N-7013	BTA-39K	
R31	5600Ω	2	N-9491	BTB-5600	
R33	10KΩ	½	N-4895	BTS-10K	
R33	2200KΩ	½	N-4899	BTS-2200K	
R34	220KΩ	½	N-4899	BTS-220K	
R35	1Meg	½	N-3976	BTS-1Meg	
R36	220KΩ	½	N-4468	BTS-150K	
R37	39KΩ	1	N-7013		
R38	1000Ω	½	N-5341	BTS-1000	
R39	390Ω	½	N-5159	BTS-390	
R40	330Ω	½	N-4420	BTS-330	
R41	15KΩ	½	N-5424	BTS-15K	
R42	12KΩ	½	N-5690	BTS-12K	
R43	6.8Meg	½	N-4038	BTS-6.8Meg	
R44	220KΩ	½	N-4899	BTS-220K	
R45	220KΩ	5%	N-9041	BTS-220K 5%	
R46	100KΩ	½	N-2973	BTS-100K	
R47	180KΩ	5%	N-7401	BTS-180K 5%	
R48	15KΩ	½	N-5424	BTS-15K	
R49	220Ω	2	N-9060		

Note: Not used in all Models.
⊕ Items R59A, R59B, R59C, C53A, C53B, C53C are combined in one unit.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R50	560KΩ	½	N-7790	BTS-560K	
R51	560KΩ	½	N-7790	BTS-560K	
R52	47KΩ	½	N-7124	BTS-47K	
R53	15KΩ	½	N-5424	BTS-15K	
R54	220KΩ	½	N-4899	BTS-220K	
R55	3900Ω	½	N-7399	BTS-3900	
R56	1200Ω	½	N-5793	BTS-1200	
R57	4700Ω	½	N-7000	BTS-4700	
R58	1800Ω	½	N-4281	BTS-1800	
R59A	22KΩ	9	⊕N-8042	BTS-22K	
B	8200Ω	1		BTS-8200	
C	8200Ω	1		BTS-8200	
R60	1.5Meg	½	N-4470	BTS-1.5Meg	
R61	15KΩ	½	N-5424	BTS-15K	
R62	390KΩ	½	N-9026	BTS-390K	
R63	2700Ω	½	N-8103	BTS-2700	
R64	1500Ω	½	N-7398	BTS-1500	
R65	56KΩ	½	N-4823	BTS-56K	
R66	2.2Meg	9	N-4430	BTS-2.2Meg	
R67	820Ω	1	N-9016	BTA-820	
R68	2700Ω	2	N-7126	BTS-2700	
R69	56Ω	½	N-8023	BTS-56	
R70	56Ω	½	N-8023	BTS-56	
R71	10KΩ	½	N-4895	BTS-10K	
R72	100KΩ	½	N-2973	BTS-100K	
R73	100KΩ	½	N-2973	BTS-100K	
R74	4.7Meg	½	N-4061	BTS-4.7Meg	
R75	100KΩ	½	N-2973	BTS-100K	
R76	470KΩ	½	N-5694	BTS-470K	
R77	820Ω	½	N-4279	BTS-820	
R78	5600Ω	½	N-7406	BTA-5600	
R79	180KΩ	5%	N-7401	BTS-180K 5%	
R80	82KΩ	½	N-9015	BTS-82K	
R81	8200Ω	½	N-4897	BTS-8200	
R82	150KΩ	1	N-9017	BTA-150K	
R83	150KΩ	1	N-9017	BTA-150K	
R84	390KΩ	½	N-9026	BTS-390K	
R85	10Ω	½	N-1349		
R86	560Ω	½	N-4280	BTS-560	
R87	4.3Ω	½	N-8125		
R88	470KΩ	½	N-8029		
R89	270KΩ	½	N-7004	BTS-270K	
R90	470KΩ	½	N-5694	BTS-470K	Note

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	RCA TYPE No.
T1	117VAC @1.46A	575VCT .210ADC	5VAC @3A; SEC. 4 6.3VAC @1.2A	6.3VAC @1.5A; SEC. 5 6.3VAC @5.6A	N-8935					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	REPLACEMENT DATA: RCA TYPE No.	NOTES
T2	200Ω	1400Ω	N-9002	A-8125 ①	A-3003 ①	TSO-5 ①; TFB-16 & TW-7 ②③	A-97X ①; D-24 & WC-12 ②④	209T1 ①; 232T1 & 212S1 ⑦	Vert. Osc. Trans. Horiz. Output Trans.
T3	192Ω tap @80.1Ω, 36Ω	0Ω	N-8936						
T4	2000Ω		N-8937	A-8140 ①⑤	A-3081 ①	TSO-6 ①⑤	A-103X ①⑤		Vert. Output Trans.
T5A	tap @. 9Ω 4Ω		N-8930	DY-10 ⑥	MDF-30 ⑥	TY-4 ⑥	Y-30 ⑥	214D1	Horiz. Deflection Coils
B	3.4Ω								Vert. Deflection Coils

① Drill one new mounting hole.
② Drill new mounting holes.
③ Connect terminal #8 to terminal #7, original terminal #3 to new terminal #7 and #8, original #3 to new #1, original #1 to new #1, connect TW-7 across terminals #3 and #1.
④ Connect original 6BQ6 plate lead to terminal #9, connect terminal #5 to terminal #7, original terminal #3 to new #5, original #2 to new #3, original #1 to new #3, connect coded blue and green terminals of WC-12 across terminals #3 and #1 of trans.
⑤ Connect as auto transformer.
⑥ Use original deflection coil network.
⑦ Connect original 6BQ6 plate lead to terminal #10 connect terminal #3 to terminal #3, then connect original #3 to new #7, original #2 to new #5, original #1 to new #1, connect 212S1 across terminal #3 and #1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T6	3.2KΩ	3.4Ω	168Ω	.38Ω	N-8938	A-3849 ①	A-3018 ①	RO-304	S-1X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	8"	8Ω	3.4Ω	N-8926 N-8934 ①		8E615	① Alternate 5" EM Speaker

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: MILLER PART No.	NOTES
L1A	Ant. Coil	0Ω CT	0Ω	N-9153				Channel 2
B	Ant. Coil	0Ω CT	0Ω	N-9153				Channel 3
C	Ant. Coil	0Ω CT	0Ω	N-9154				Channel 4
D	Ant. Coil	0Ω CT	0Ω	N-9155				Channel 5
E	Ant. Coil	0Ω CT	0Ω	N-9156				Channel 6
F	Ant. Coil	0Ω CT	0Ω	N-9157				Channel 7
G	Ant. Coil	0Ω CT	0Ω	N-9158				Channel 8
H	Ant. Coil	0Ω CT	0Ω	N-9159				Channel 9
I	Ant. Coil	0Ω CT	0Ω	N-9160				Channel 10
J	Ant. Coil	0Ω CT	0Ω	N-9161				Channel 11
K	Ant. Coil	0Ω CT	0Ω	N-9162				Channel 12
L	Ant. Coil	0Ω CT	0Ω	N-9163				Channel 13
L2	Fil. Choke	0Ω		N-8415				
L3A	RF, Mixer Grid & Osc. Coil	0Ω		N-9164				Channel 2
B	RF, Mixer Grid & Osc. Coil	0Ω		N-9165				Channel 3
C	RF, Mixer Grid & Osc. Coil	0Ω		N-9166				Channel 4
D	RF, Mixer Grid & Osc. Coil	0Ω		N-9167				Channel 5
E	RF, Mixer Grid & Osc. Coil	0Ω		N-9168				Channel 6
F	RF, Mixer Grid & Osc. Coil	0Ω		N-9169				Channel 7
G	RF, Mixer Grid & Osc. Coil	0Ω		N-9170				Channel 8
H	RF, Mixer Grid & Osc. Coil	0Ω		N-9171				Channel 9
I	RF, Mixer Grid & Osc. Coil	0Ω		N-9172				Channel 10
J	RF, Mixer Grid & Osc. Coil	0Ω		N-9173				Channel 11
K	RF, Mixer Grid & Osc. Coil	0Ω		N-9174				Channel 12
L	RF, Mixer Grid & Osc. Coil	0Ω		N-9175				Channel 13
L4	Fil. Choke	0Ω		N-9416				
L5	RF Choke	0Ω		N-9417				
L6	1st. Video IF	.7Ω		N-9408				
L7	RF Choke	8.2Ω		N-7321			4612	10 Microhenries, (RFC part # CL-1)
L8	2nd. Video IF	.3Ω	.3Ω	N-8929	17-1063		6249	
L9	3rd. Video IF	.3Ω	.3Ω	N-8929	17-1063		6249	
L10	4th. Video IF	.3Ω	.3Ω	N-8929	17-1064		6250	
L11	Series Peaking Coil	2.7Ω		N-8250	19-3036	TV-180	6153	34 Microhenries

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L12	Series Peaking Coil	3.1Ω		N-8932		TV-180	4628	48 Microhenries
L13	Series Peaking Coil	6.5Ω		N-8933	19-3160 *	TV-184 *	4644 *	155 Microhenries, wound on 5.6KΩ resistor
L14	4.5MC Trap	3.9Ω		N-9011	20-1004	TV-151	1470	
L15	Shunt Peaking Coil	8Ω		N-8934			4646 *	222 Microhenries, wound on 5.6KΩ resistor
L16	Sound IF	1.1Ω		N-7746	17-3400	TV-151	1469	
L17	Ratio Det.	9Ω	.6Ω CT	N-8928	17-1033 †	TV-110 †	1468 †	Tertiary winding -.4Ω
L18	Horiz. Osc.	50Ω		N-8931	19-1576	TV-163	6210	

* Parallel with 5.6KΩ resistor
† Drill mounting holes.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AIRLINE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG (S/B)	1/4 A. 125V.	N-7355	N-9007	313.250 (3AG 1/4A S/B)	357001	MDL 1/4	4406

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	RF Tuner	N-8927	
M3	Crystal Diode		Video Detector (Type 1N64)
M4	Centering Magnet	N-8939	
M5	Ion Trap	N-9012	
	Cabinet	N-435	Model 3064A
	Cabinet	N-407	Consolette
	Back Cover	N-9182	Models 3064A, 3064B
	Back Cover	N-8947	Models 3083A, 3083B
	Safety Glass	N-9463	Models 3064A, 3064B
	Safety Glass	N-9462	Models 3083A, 3083B
	Mask	N-9179	Models 3064A, 3064B
	Mask	N-9023	Models 3083A, 3083B
	Knob	N-9018	Fine Tuning
	Knob	N-9260	Channel Selector
	Knob	N-9261	Off/On/Volume
	Knob	N-9020	Contrast

TROUBLE SHOOTING AIDS (cont)

AUDIO

WEAK OR NO SOUND

Check by substitution, V7, V8, and V9. Check stages of V8B and V9 using audio signal generator. Apply audio signal across R43.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V8B especially all coupling and by-pass capacitors.

BUZZ

Substitute V8. Realign ratio detector and audio IF stages. Follow outline in alignment table. Check C5, C40 and C41.

DISTORTED

Check by substitution V7, V8 and V9. Check stages of V8B and V9 using audio signal generator and scope. Apply audio signal across R43. Connect scope across secondary of T6.

If Satisfactory	If Unsatisfactory
Check audio IF and ratio detector alignment and components.	Check components associated with V8B and V9 especially C44, C45, C49, C47, C48, T6 and speaker.

POWER

DEAD SET

Check 1/4 Amp. fuse (M1). Check AC interlock assembly, T1 and switch on volume control if filaments do not light.

SMALL AND/OR DIM RASTER

Check M1. Check V18. Check B+ filter and decoupling network.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V14, V15, V16 and V17. Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check R87, R88, C70, T3, T5A, C69, C74 and other associated components.	Check C66, C67 and other associated circuit components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V14, V15, V16, V17 and V18. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V14, V15, V16, V17 and V18. Check R87, R88, C70, C69, C74, T3, T5A, picture tube and other associated components.

GENERAL

RASTER SOUND NO PICTURE

See "Loss of Video".

RASTER NO SOUND NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check associated components.

NO RASTER NO SOUND NO PICTURE

See "Dead Set".

TOTAL LOSS OF SYNC

Check by substitution V10 and V11. Check associated circuit components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

POOR FOCUS

Check V18. Check potentials applied to picture tube. If satisfactory check picture tube for low emission and/or gassy condition.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

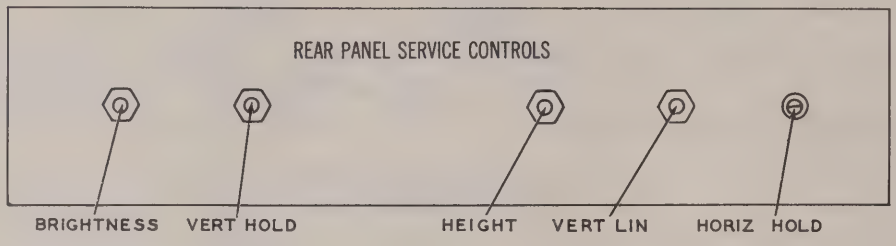
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 3 wood screws holding wood strip at top of cabinet. Remove wood strip and safety glass. Use extreme catuion when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Adjust the horizontal hold slug (L18) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L17) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for LV power supply protection. (For location, see tube placement chart).

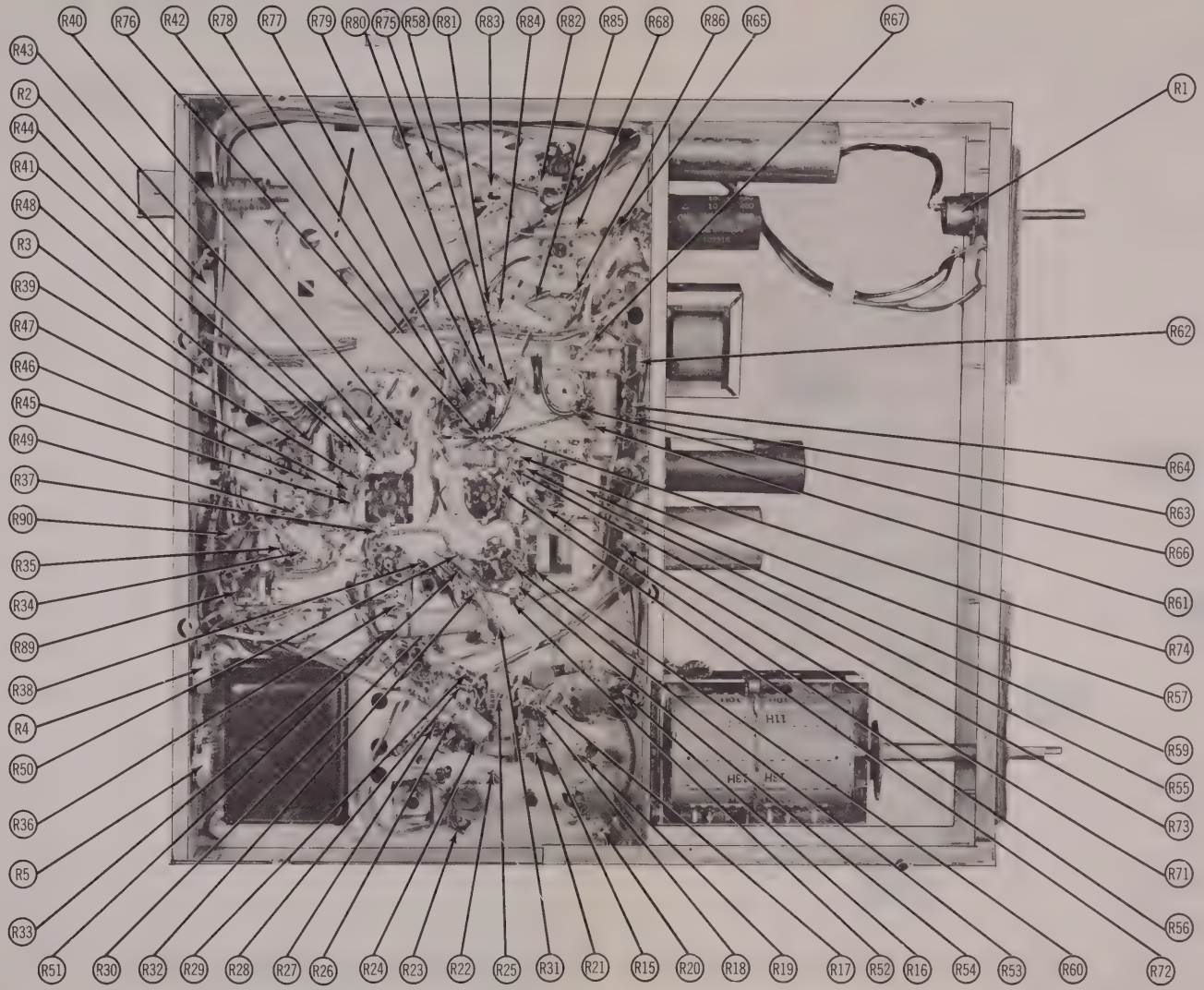
CENTERING

Centering is accomplished mechanical by adjusting a magnetic ring around the neck of the picture tube located flush against the yoke. Turn the knurled knob and at the same time rotate the ring around the tube until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Disconnect built-in antenna. Remove 2 screws. Remove antenna strip from rear cover.
3. Remove 3 wood screws, loosen 2 wood screws, remove 1 metal screw, lift rear cover up and remove.
4. Disconnect speaker.
5. Remove 5 chassis bolts. Remove chassis.
6. Remove 2 wood screws. Remove speaker.

PROPERTY OF
L. F. BU



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKEN
[illegible]

CROSLEY MODELS
F-110BE, BK, CE, GN, RD (Ch. 110F)

CROSLEY MODELS
F-110BE, BK, CE, GN, RD (Ch. 110F)

TRADE NAME	Crosley Models F-110BE, BK, CE, GN, RD (Ch. 110F)
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	Battery Operated Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	1.5 Volts "A" Supply & 75 Volts "B" Supply
RATING	200MA @ 1.5 Volts DC & 8MA @ 75 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

With tuning gang fully closed adjust dial so that index mark on cabinet falls approximately 1/8" clockwise past "55" on the dial.

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PARTS LIST AND DESCRIPTIONS

CROSLEY
MODEL F-110BE (Ch. 110F)

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		CROSLEY PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AFAmp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CROSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	10	80	155355	PRS150/12		BR1015		TC42	TVA-1406	
C2	.05	150	39433-14	P285-05	DF-503					
C3	39		137727-109	SI39	D6-390		GP1K-390	UC-5439	5GA-Q39	
C4	.05	150	39433-14	P285-05	DF-503					
C5	.002	150	39433-10	P285-002	D6-202	TM5D2	GP2-333-202	DC-522	5HK-D2	
C6	.005		144675-2	P285-005	D6-502	TM5D5	GP2-333-502	DC-525	5HK-D5	
C7A	100		♦142951-2	SI100	♦PC-50	TM5T1	♦1403-01	UC-531	♦100C1	
B	100			SI100		TM5T1		UC-531		
C8	.001		144675-28	P285-001	D6-102	TM5D1	GP2-333-102	DC-521	5HK-D1	
C9A	5000		†151550-3		†PC91		†1407-03		†103C3	
B	100									
C	5000									
C10	.005	150	39433-11	P285-005	D6-502	TM5D5	GP2-333-502	DC-525	5HK-D5	

♦ Items C7A, C7B and R7 are combined in one unit.
† Items C9A, C9B, C9C, R9A, R9B, R9C are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	1Meg	½	B-155786					Volume

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CROSLEY PART No.	IRC PART No.	
R2	100KΩ	½	39374-49	BTS-100K	
R3	15KΩ	½	39374-39	BTS-15K	
R4	3.3Meg	½	39374-73	BTS-3.3Meg	
R5	4.7Meg	½	39374-77	BTS-4.7Meg	
R6	1000Ω	½	39374-25	BTS-1000	
R7	47KΩ	½	♦142951-2	BTS-10Meg	
R8	10Meg	½	39374-45	BTS-10Meg	

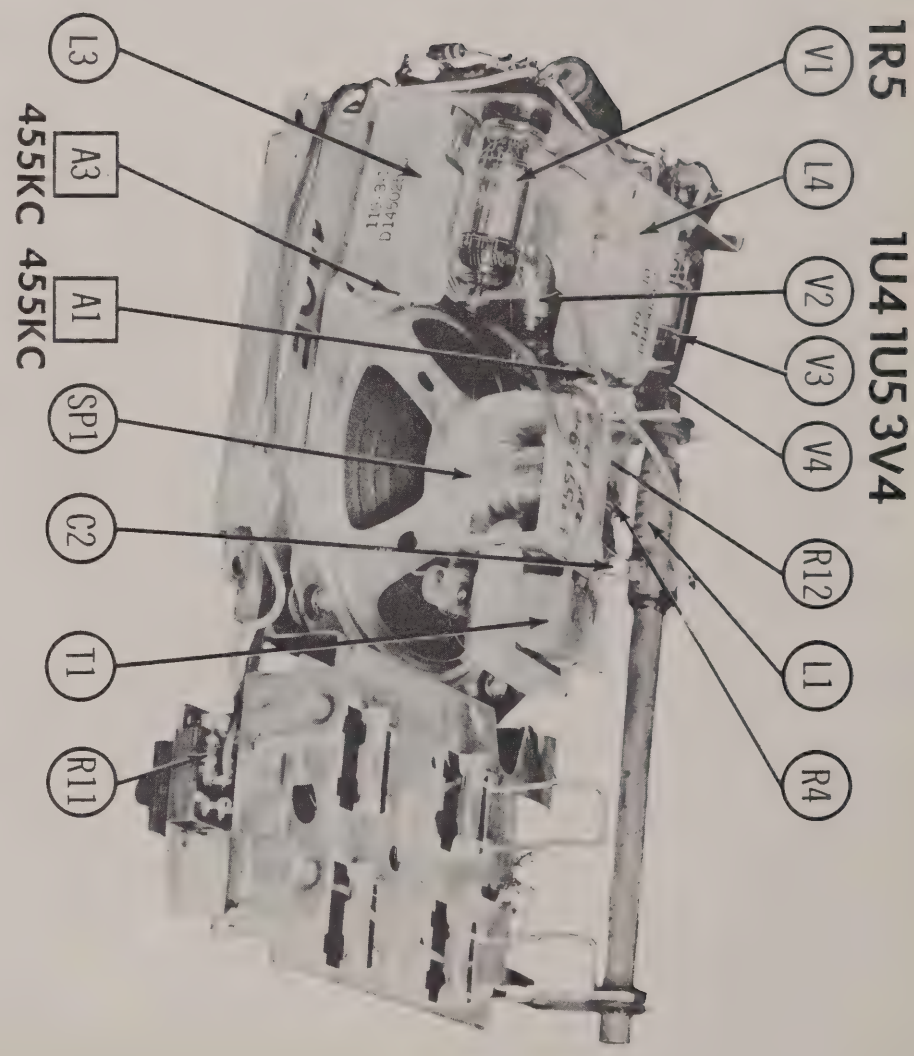
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CROSLEY PART No.	IRC PART No.	
R9A	4.7Meg	½		BTS-4.7Meg	
B	1Meg	½	†151550-3	BTS-1Meg	
C	2.2Meg	½		BTS-2.2Meg	
R10	390Ω	½	39374-20	BTS-390	
R11	390Ω	½	39374-20	BTS-390	
R12	1000Ω	½	39374-25	BTS-1000	

♦ Items R7, C7A, C7B are combined in one unit.
† Items R9A, R9B, R9C, C9A, C9B, C9C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	9.8KΩ	3.3Ω	774Ω	.35Ω	Part of Spkr.	A-3849 ①	A-2900①	RO-301 ①	S-1X ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	155159	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1.1Ω		155415				
L2	Osc. Coil	2.1Ω	9Ω	155329			70-Osc.*	
L3	Input IF	24Ω	24Ω	1450025-8	16-6758	BC-352	12-C1	
L4	Output IF	25Ω	25Ω	145025-7	16-6758	BC-353	12-C2	

* Disregard tap on secondary winding.

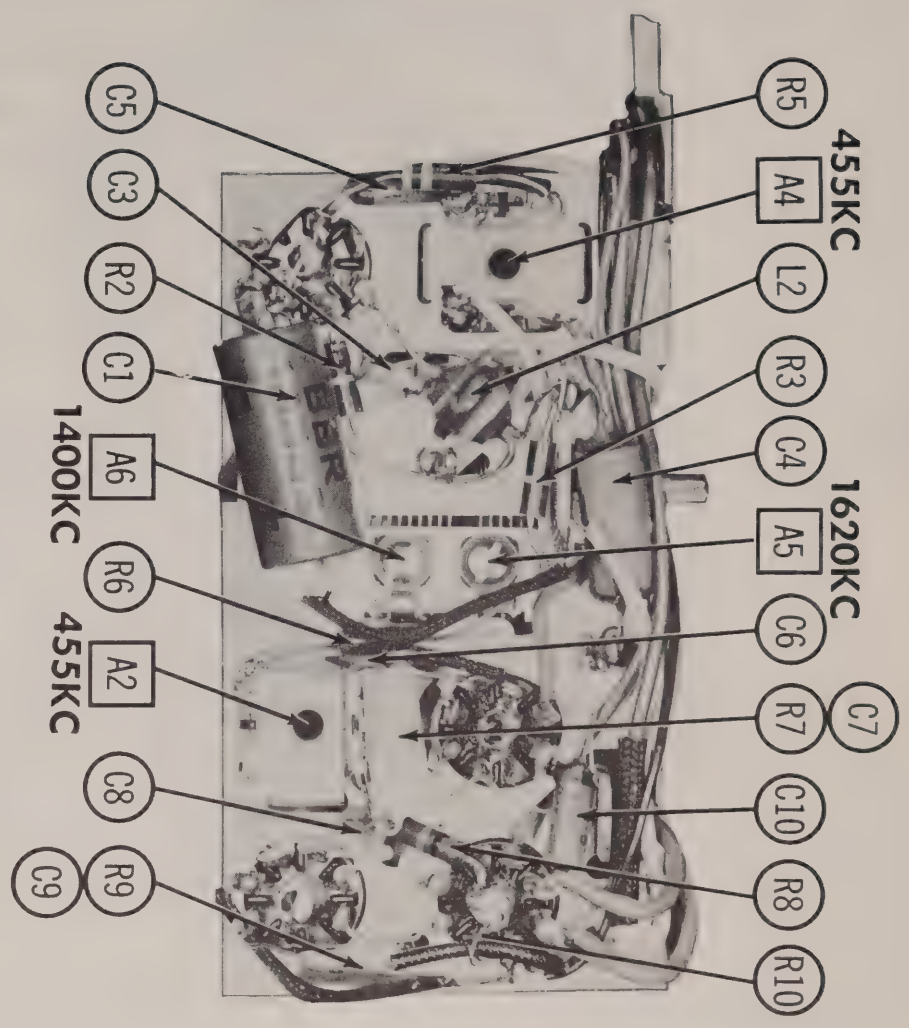
BATTERIES

ITEM No.	VOLTAGE	CROSLEY PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1 M2	1.5V 75V		964	437		21R	XX50		Two in parallel

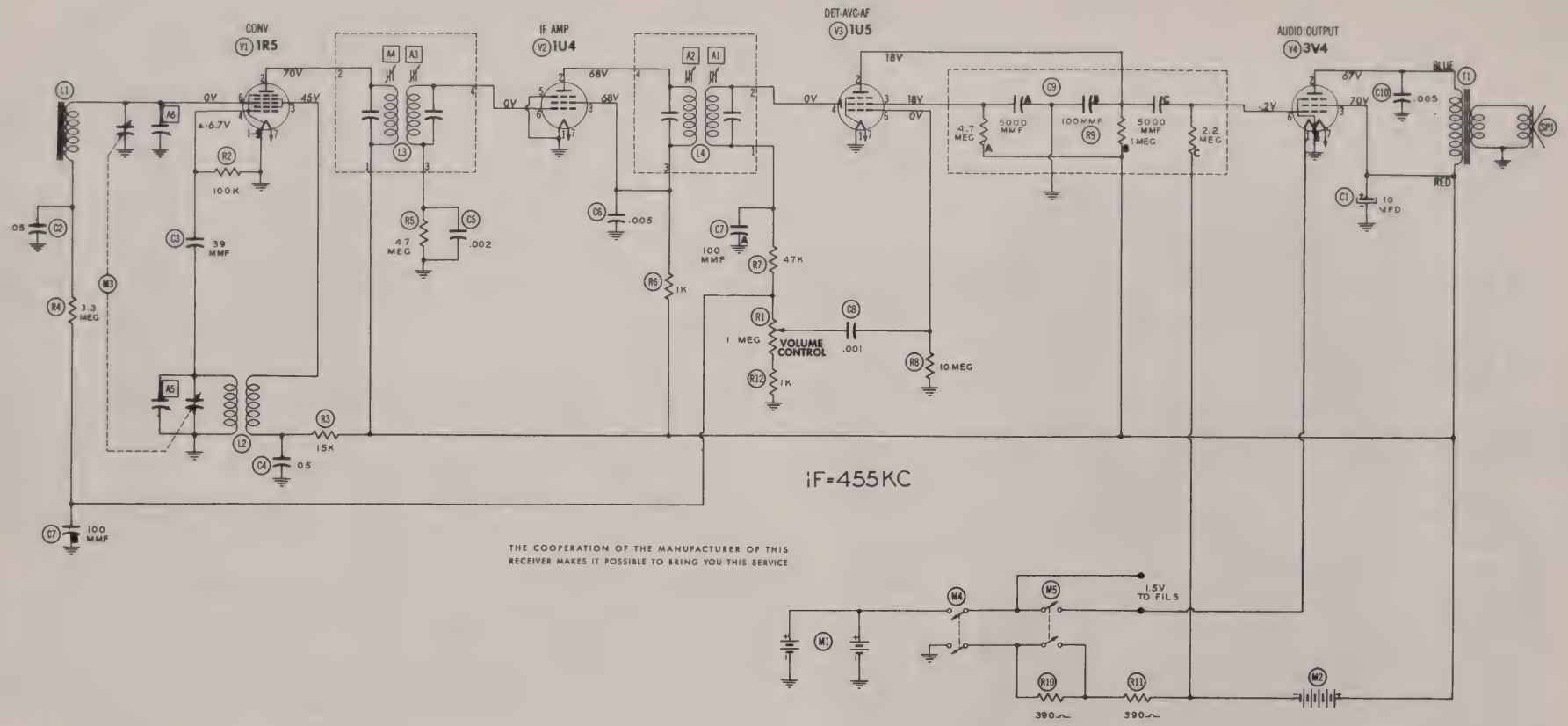
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M3	Tuning Capacitor	155290	18-240MMF, 19-116MMF
M4	Switch	155242	Off/On
M5	Switch	155315	Battery Saver (Bracket included)
	Cabinet Assy.	155811-1	Model F-110BE
	Cabinet Assy.	155811-2	Model F-110BK
	Cabinet Assy.	155811-5	Model F-110CE
	Cabinet Assy.	155811-3	Model F-110GN
	Cabinet Assy.	155811-4	Model F-110RD
	Back	155239-1	Model F-110BE
	Back	155239-2	Model F-110BK
	Back	155239-5	Model F-110CE
	Back	155239-3	Model F-110GN
	Back	155239-4	Model F-110RD
	Front	155813-1	Model F-110BE
	Front	155813-2	Model F-110BK
	Front	155813-5	Model F-110CE
	Front	155813-3	Model F-110GN
	Front	155813-4	Model F-110RD
	Escutcheon	156182-1	Model F-110BE
	Escutcheon	156182-2	Model F-110BK
	Escutcheon	156182-5	Model F-110CE
	Escutcheon	156182-3	Model F-110GN
	Esc utcheon	156182-4	Model F-110RD
	Handle	155286-1	
	Knob	156086-1	Tuning, Model F-110BE
	Knob	156086-2	Tuning, Model F-110BK
	Knob	156086-5	Tuning, Model F-110CE
	Knob	156086-4	Tuning, Model F-110RD
	Knob	156086-3	Tuning, Model F-110GN
	Knob	155262-1	Volume

CHASSIS—BOTTOM VIEW



CROSLEY
MODEL F-110BE (Ch. 110F)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†24Ω	†15KΩ	100KΩ	*	4.3Meg	*
V 2	1U4	*	†1KΩ	†1KΩ	1Meg	*	4.7Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	1Meg	1KΩ	10Meg	*
V 4	3V4	*	†775Ω	†0Ω	390Ω	*	2.2Meg	*

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN # 3 OF V4 (B+)
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
ALL MEAUREMENTS TAKEN WITH M5 IN MAXIMUM POWER POSITION (CLOSED)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF

HALLICRAFTERS
MODEL ST-83

HALLICRAFTERS
MODEL ST-83

TRADE NAME	Hallicrafters Model ST-83		
MANUFACTURER	Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Ill.		
TYPE SET	AC Operated AM-FM Superheterodyne Tuner for Custom Installations		
TUBES	Twelve		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING	.32 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1750KC	FREQ. MOD.	88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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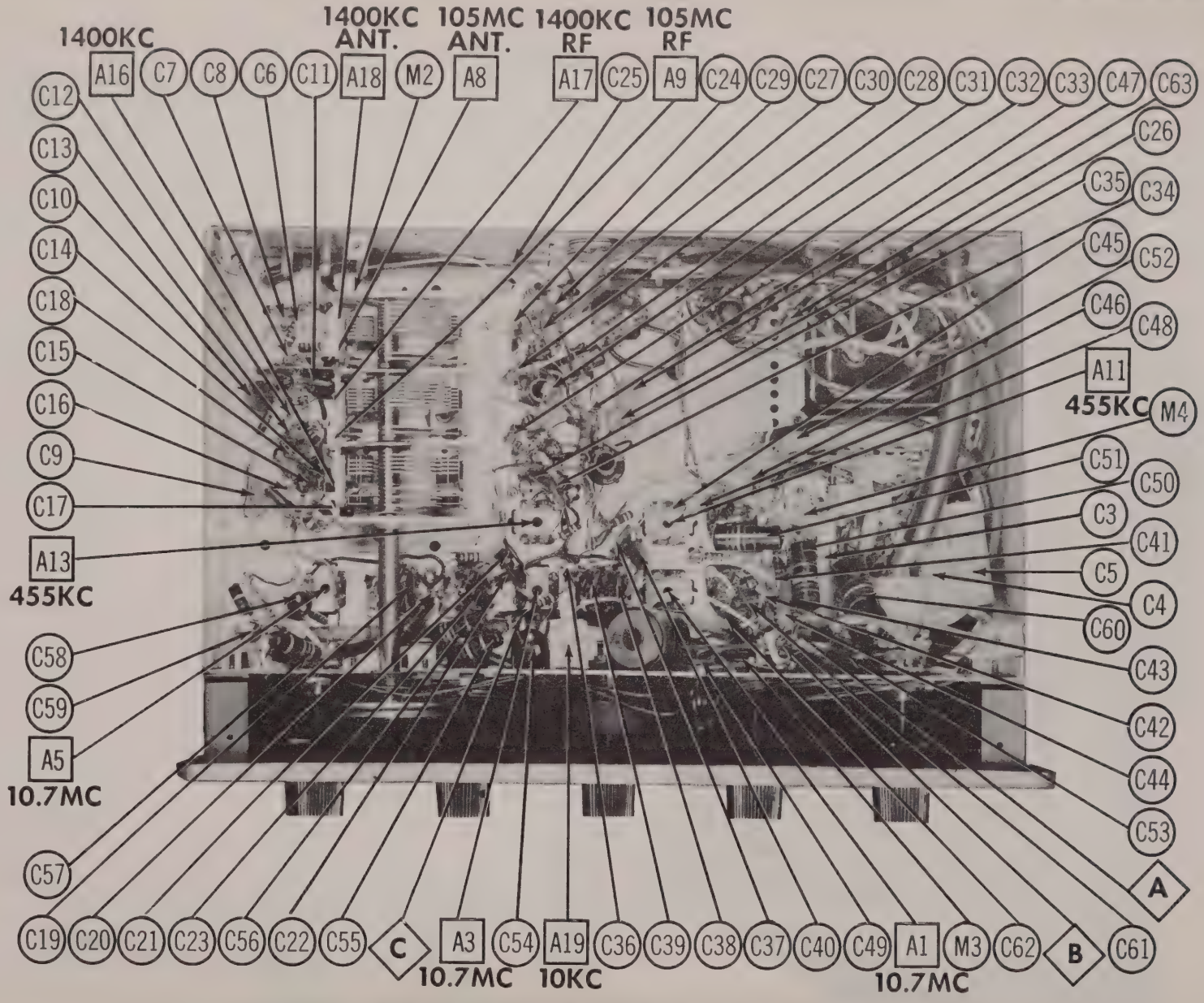
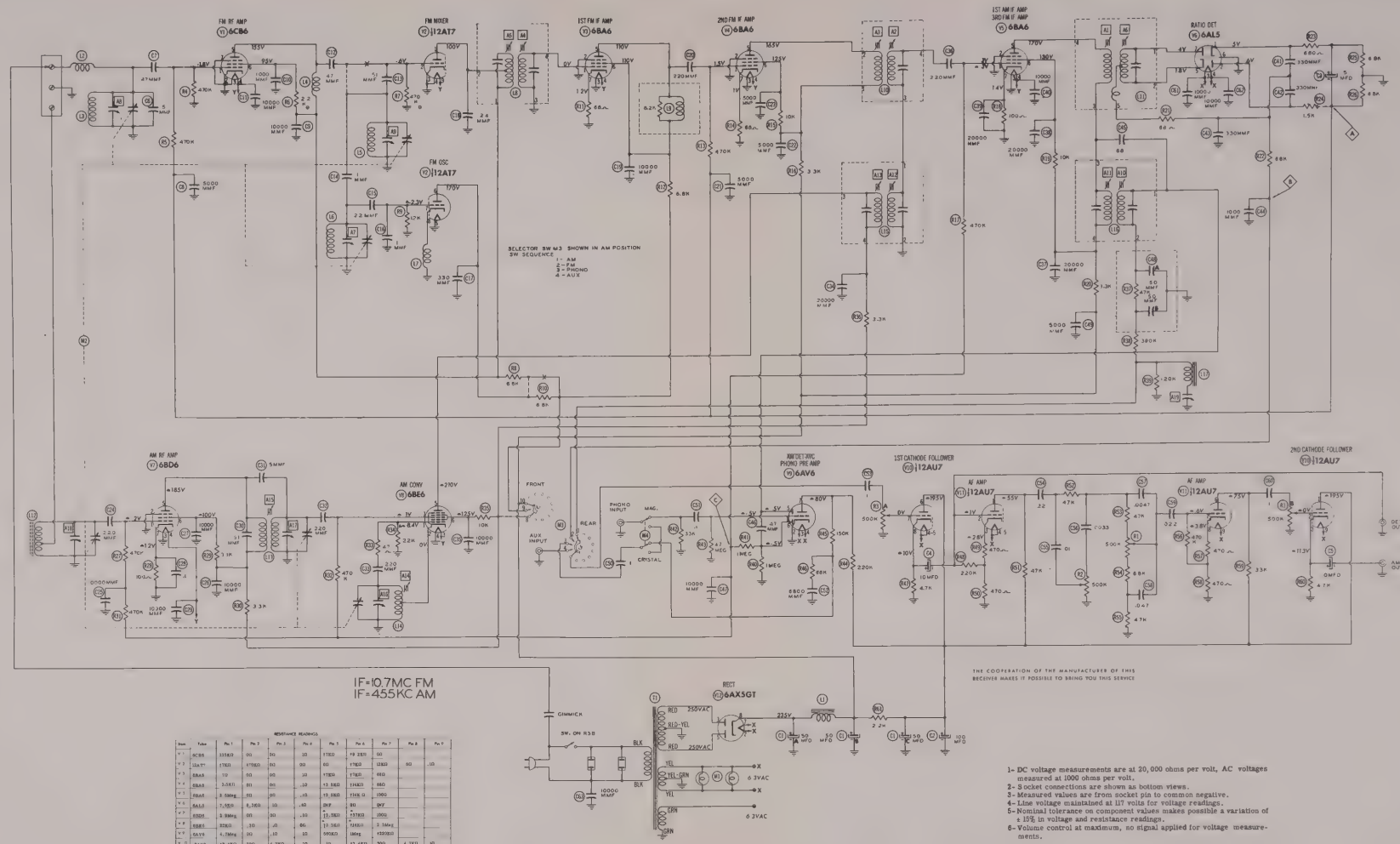


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	335KΩ	0Ω	0Ω	1Ω	178Ω	98 2KΩ	0Ω		
V2	12AT7	178Ω	670KΩ	0Ω	0Ω	0Ω	178Ω	128Ω	0Ω	.1Ω
V3	6BA6	1Ω	0Ω	0Ω	1Ω	178Ω	178Ω	68Ω		
V4	6BA6	3.3KΩ	0Ω	0Ω	.1Ω	13.2KΩ	114KΩ	66Ω		
V5	6BA6	8.5MEG	0Ω	0Ω	.1Ω	19.2KΩ	114K Ω	106Ω		
V6	6AL5	7.5KΩ	8.2KΩ	.1Ω	.4Ω	2MF	0Ω	2MF		
V7	6BD6	3.9MEG	0Ω	0Ω	.1Ω	13.2KΩ	137KΩ	100Ω		
V8	6BE6	320KΩ	.1Ω	.4Ω	.6Ω	13.2KΩ	124KΩ	2.5MEG		
V9	6AV6	4.7MEG	0Ω	.1Ω	.1Ω	590KΩ	1MEG	1230KΩ		
V10	12AU7	12.4KΩ	330Ω	4.7KΩ	.1Ω	1Ω	12.4KΩ	390Ω	4.1KΩ	.6Ω
V11	12AU7	190KΩ	335KΩ	840Ω	.4Ω	1Ω	335KΩ	47KΩ	840Ω	.1Ω
V12	6AX5GT	2MF	.1Ω	330	2MF	840	2MF	2MF	1Ω	178KΩ

ALL MEASUREMENTS IN FM POSITION UNLESS NOTED
* MEASURED IN AM POSITION
+ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 9 OF V12.

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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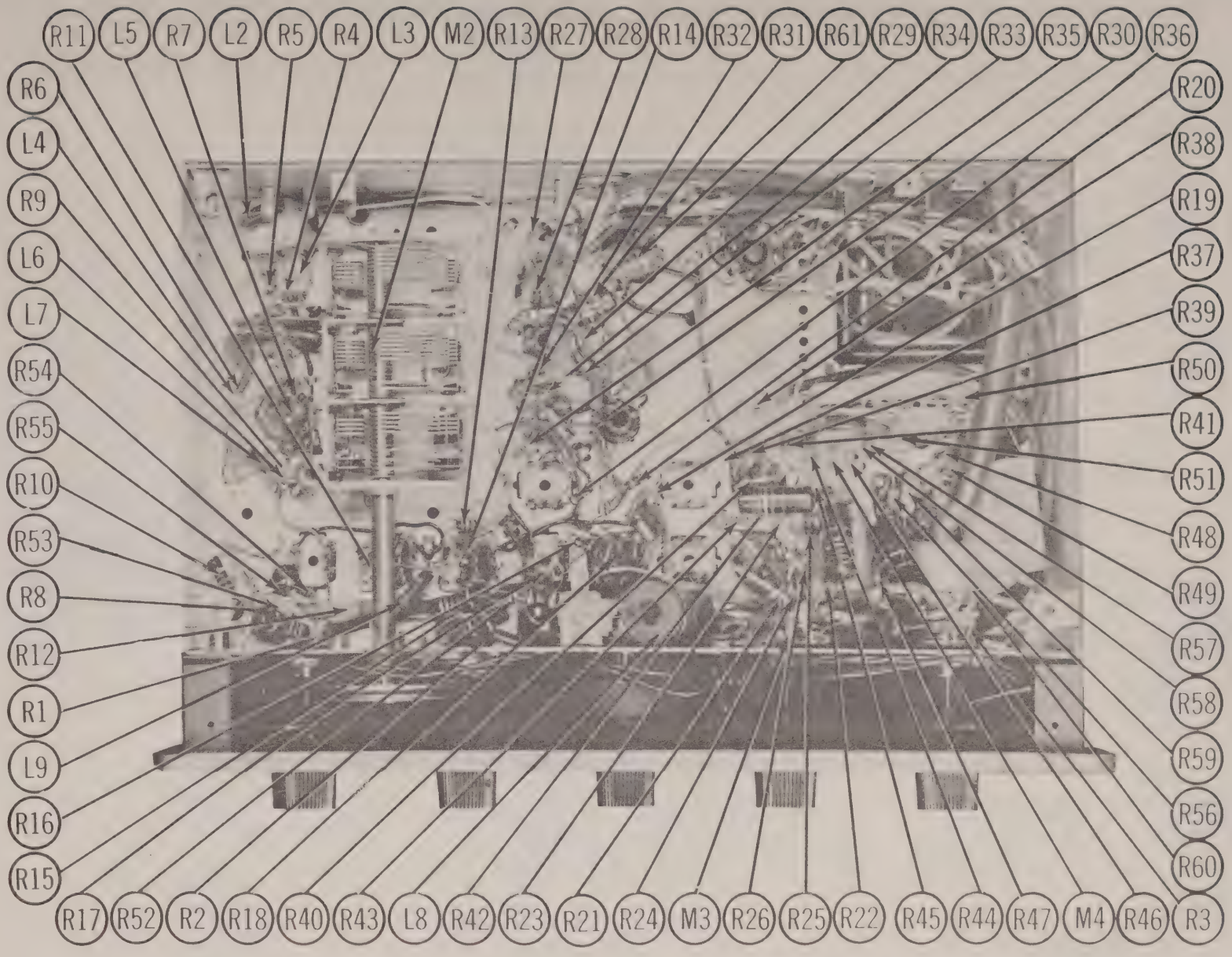


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set bass and treble controls to mid-position.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

FM IF ALIGNMENT

Disconnect capacitor C13 from pin 2 of V2.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to pin 2 (grid) of 12AT7 (V2) Low side to chassis at pin 3 of V2.	10.7 MC (Unmod.)	FM	90MC	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4 A5	Adjust for maximum deflection. Attenuate generator output to maintain 1 volt at VTVM.
2.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

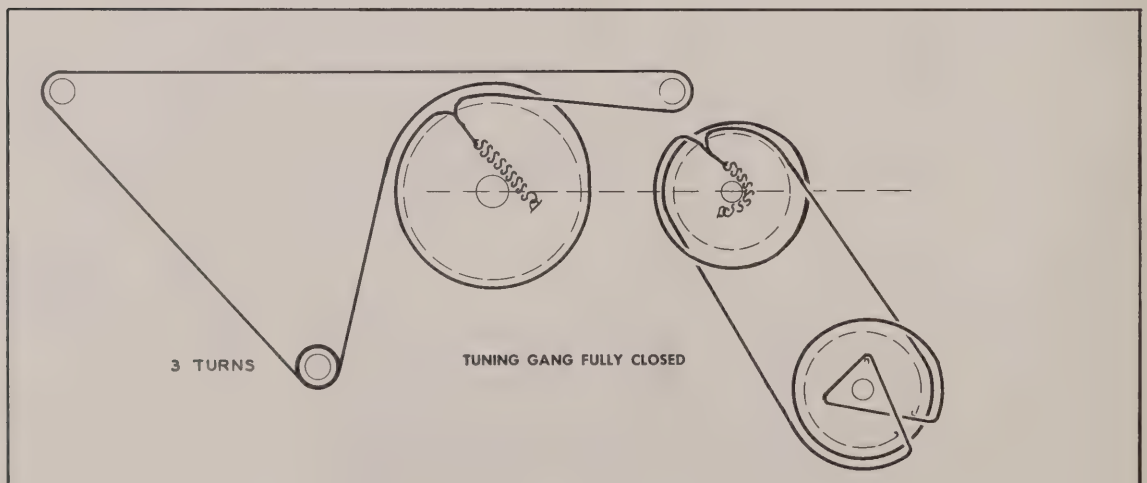
FM RF ALIGNMENT

Re connect capacitor C13 to pin 2 of V2.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	270Ω Carbon Resistor	High side thru 270Ω resistor to "FM" terminal. Low side to "G" terminal	90MC (Unmod.)	FM	90MC	DC probe to point Ⓐ. Common to chassis.	L6, L5, L3	Compress or expand coils in order given, for maximum deflection.
4.	"	"	105MC	"	105MC	"	A7, A8, A9	Adjust A7 and A8 for maximum deflection. Adjust A9 for maximum deflection while rocking tuning gang.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 7 (grid) of 6BE6 (V8). Low side to chassis near V8.	455KC (Unmod)	AM	1000KC	DC probe to point Ⓒ. Common to chassis.	A10, A11 A12, A13	Disconnect capacitor C32 from pin 7 of V8. Adjust for maximum deflection.
6.		Loop	600KC	"	600KC	"	A14, A15	Reconnect capacitor C32 to pin 7 of V8. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
7.		"	1400KC	"	1400KC	"	A16, A17 A18	Adjust for maximum deflection.
8.		"	1400KC (10KC AM)	"	"	Connect output meter across amplifier output	A19	Adjust for MINIMUM output.



DIAL CORD STRINGING

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

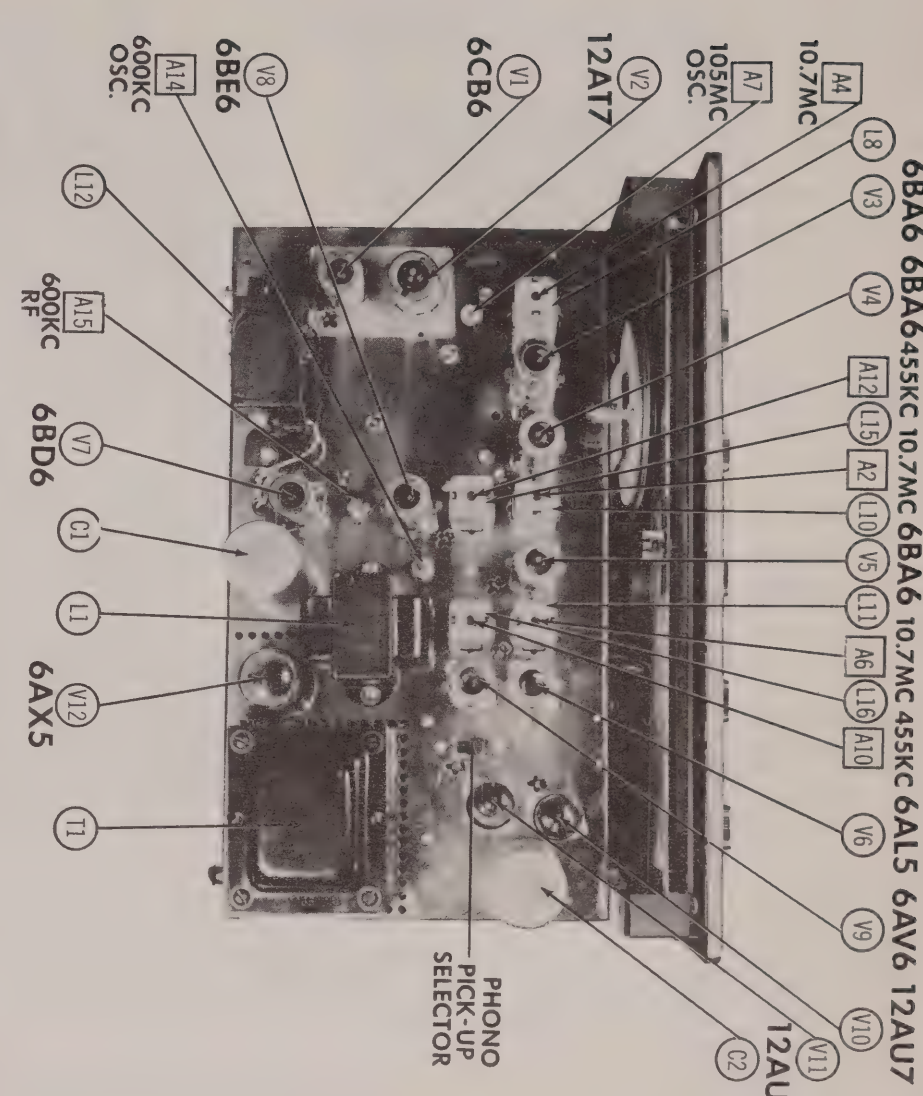
ITEM No.	USE	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	FM RF Amplifier	90X6CB6	6CB6	7CH	
V2	FM Converter	90X12AT7	12AT7	9A	
V3	lst. FM IF Amp.	90X6BA6	6BA6	7BK	
V4	2nd. FM IF Amp.	90X6BA6	6BA6	7BK	
V5	3rd. FM IF Amp.- lst. AM IF Amp.	90X6BA6	6BA6	7BK	
V6	Ratio Detector	90X6AL5	6AL5	6BT	
V7	AM RF Amplifier	90X6BD6	6BD6	7BK	
V8	AM Converter	90X6BE6	6BE6	7CH	
V9	AM Det.-AVC- Phono Pre-Amp.	90X6AV6	6AV6	7BT	
V10	Cathode Follower	90X12AU7	12AU7	9A	
V11	Tone Amplifier	90X12AU7	12AU7	9A	
V12	Rectifier	90X6AX5GT	6AX5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■50	350	45B225	AFH2-44		BO34		FP331.3	TVL-3642	
B	▲50	350		PRS350/24		BR3035A				
C	▲50	350								
C2	▲100	350	45B231	AFH1-43		A041		FP138	TVL-1630	
C3	5	50	45B175	PRS105/4		BR550		TC30	TVA-1303	
C4	10	50	45B211	PRS50/10		BR105		TC32	TVA-1304	
C5	10	50	45B211	PRS50/10		BR105		TC32	TVA-1304	
C6	5		47X20UK050M	SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C7	47		47X20UJ470K	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C8	5000		47A168	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C9	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C10	1000		47B230	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C11	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C12	47		47X20SJ470K	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C13	51		47X20UK510K/D		TCN-51		N750K-510			
C14	1		47X20UJ010C				N750K-010			
C15	22		47X20UJ220K	SI22N750	TCN-22		N750K-220		5TCU-Q22	
C16	1		47X20UJ010C				N750K-010			
C17	330		47X35UJ331K	SI330N750	TCN-330		N750L-331		5TCU-T33	
C18	24		47X20UK240K	SI25N750	TCN-24		N750K-240		5TCU-Q25	
C19	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C20	220		47B20A221K5	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C21	5000		47A168	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C22	5000		47A168	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C23	5000		47A168	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C24	220		47B20A221K5	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C25	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C26	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C27	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C28	.1	200	46A207	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C29	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C30	51		47X20UK510K/D		TCN-51		N750K-510			
C31	5		47A160-6	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C32	220		47X32UK221K/D	SI220N750	TCN-220		N750L-221		5TCU-T22	
C33	220		47X32UK221K/D	SI220N750	TCN-220		N750L-221		5TCU-T22	
C34	20000		47A242	BPD-02	DD-203	PTE6S2		PT612	5HK-S2	
C35	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C36	220		47B20A221K5	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C37	20000		47A242	BPD-02	DD-203	PTE6S2		PT612	5HK-S2	
C38	20000		47A242	BPD-02	DD-203	PTE6S2		PT612	5HK-S2	
C39	20000		47A242	BPD-02	DD-203	PTE6S2		PT612	5HK-S2	
C40	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C41	330		47B20A331K5	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C42	330		47B20A331K5	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C43	330		47B20A331K5	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C44	1000	500	47X25B102K	1464-001		2R5D1		MCB255	MS-21	
C45	.68		47A160-1		TCZ-.68		NP0K-R68			
C46	47		47X20UJ470K	SI47N330						
C47	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C48A	50			SI50		TM5Q5		UC-545		
B	50		♦49A023	SI50	♦PC52	TM5Q5	♦1403-03	UC-545	♦100C3	
C49	5000		47A168	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C50	.1	200	46A207	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C51	.1	200	46A207	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C52	6800	500	47X20B682K							
C53	.1	200	46A207	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C54	.22	400	46A212	P488-22		PTE4P22		PT4025	4TM-P22	
C55	.01	400	46A208	P488-01	D6-103	PTE4S1	811-01	PT411	4TM-S1	
C56	.0033	400	46A210	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D3	
C57	.0047	400	46A218	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C58	.047	400	46A211	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C59	.022	400	46A209	P488-022	DD-203	PTE4S22		PT4122	4TM-S22	
C60	.1	600	46A214	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C61	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C62	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C63	10000		47A224	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	

♦ Items C48A, C48B, R37 are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Hallicrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	25B1019	Q11-133	AG-58-S	B-59	U-50	Bass
B	Shaft		Not Req.	Not Req.	RS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	25B1019	Q11-133	AG-58-S	B-59	U-50	Treble
B	Shaft		Not Req.	Not Req.	RS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	25B1020	Q13-133			UF55A	Volume
B	500KΩ	½	Not Req.	M13-133			UR55A	Volume
C	Shaft		Not Req.	Not ReqΩ			DS-36	Attach to R3B
D	Switch		Not Req.	76-1			US-26	Attach to R3B

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	Hallicrafters PART No.	IRC PART No.	NOTES
R4	470KΩ	½	23X20X474K	BTS-470K	
R5	470KΩ	½	23X20X474K	BTS-470K	
R6	2200Ω	½	23X20X222K	BTS-2200	
R7	470KΩ	½	23X20X474K	BTS-470K	
R8	6800Ω	2	23X40X682K	BTB-6800	Note 1
R9	12KΩ	½	23X20X123K	BTS-12K	
R10	6800Ω	1	23X30X682K	BTA-6800	Note 2
R11	68Ω	½	23X20X680K	BTS-68	
R12	6800Ω	2	23X40X682K	BTB-6800	
R13	470KΩ	½	23X20X474K	BTS-470K	
R14	68Ω	½	23X20X680K	BTS-68	
R15	10KΩ	½	23X20X103K	BTS-10K	
R16	3300Ω	½	23X20X332K	BTS-3300	
R17	470KΩ	½	23X20X474K	BTS-470K	
R18	100Ω	½	23X20X101K	BTS-100	
R19	10KΩ	½	23X20X103K	BTS-10K	
R20	3300Ω	½	23X20X332K	BTS-3300	
R21	68Ω	½	23X20X680K	BTS-68	
R22	68KΩ	½	23X20X683K	BTS-68K	
R23	680Ω	½	23X20X681K	BTS-680	
R24	1500Ω	½	23X20X152K	BTS-1500	
R25	6800Ω	½	23X20X682K	BTS-6800	
R26	6800Ω	½	23X20X682K	BTS-6800	
R27	470KΩ	½	23X20X474K	BTS-470K	
R28	100Ω	½	23X20X101K	BTS-100	
R29	33KΩ	½	23X20X333K	BTS-33K	
R30	3300Ω	½	23X20X332K	BTS-3300	
R31	470KΩ	½	23X20X474K	BTS-470K	
R32	470KΩ	½	23X20X474K	BTS-470K	

ITEM No.	RATING OHMS	RATING WATT	Hallicrafters PART No.	IRC PART No.	NOTES
R33	47Ω	½	23X20X470K		
R34	22KΩ	½	23X20X223K	BTS-22K	
R35	10KΩ	1	23X30C103K	BTA-10K	
R36	3300Ω	½	23X20X332K	BTS-3300	
R37	47KΩ	½	♦49A023	BTS-47K	
R38	390KΩ	½	23X20X394K	BTS-390K	
R39	120KΩ	½	23X20X124K	BTS-120K	
R40	1Meg	½	23X20X105K	BTS-1Meg	
R41	1Meg	½	23X20X105K	BTS-1Meg	
R42	33KΩ	½	23X20X333K	BTS-33K	
R43	4.7Meg	½	23X20X475K	BTS-4.7Meg	
R44	220KΩ	½	23X20X224K	BTS-220K	
R45	150KΩ	½	23X20X154K	BTS-150K	
R46	68KΩ	½	23X20X683K	BTS-68K	
R47	4700Ω	½	23X20X472K	BTS-4700	
R48	220KΩ	½	23X20X224K	BTS-220K	
R49	470Ω	½	23X20X471K	BTS-470	
R50	470Ω	½	23X20X471K	BTS-470	
R51	47KΩ	1	23X30X473K	BTA-47K	
R52	47KΩ	½	23X20X473K	BTS-47K	
R53	47KΩ	½	23X20X473K	BTS-47K	
R54	6800Ω	½	23X20X682K	BTS-6800	
R55	4700Ω	½	23X20X472K	BTS-4700	
R56	470KΩ	½	23X20X474K	BTS-470K	
R57	470Ω	½	23X20X471K	BTS-470	
R58	470Ω	½	23X20X471K	BTS-470	
R59	33KΩ	1	23X30X333K	BTA-33K	
R60	4700Ω	½	23X20X472K	BTS-4700	
R61	2200Ω	2	23X40X222K	BTB-2200	

♦ Items R37, C48A, C48B are combined in one unit.
Note 1. Some Models may use a 3300Ω resistor in this application.
Note 2. Some Models may use a 1500Ω resistor in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC	500VCT	6.3VCT	6.3VAC	52C265				
	ⓐ.32A	.079ADC	ⓐ2.8A	ⓐ2A					

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.079ADC	255Ω	10.1 Hy.	56C155	C-1709 ①			C-7X ①

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	Hallicrafters PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L2	FM RF Choke	0Ω		53A278			4604	1.56 Microhenries
L3	FM Ant. Coil	0Ω		51A1646				
L4	FM RF Choke	2Ω		53A008			4624	16.2 Microhenries
L5	FM RF Coil	0Ω		51A1645				
L6	FM Osc. Coil	0Ω		51A1644				
L7	Cathode Choke	.5Ω		53A280			4610	7.5 Microhenries
L8	1st. FM IF	1Ω CT	.7Ω	50C245				
L9	FM RF Choke	3.3Ω		53A279				Wound on 8.2KΩ resistor
L10	2nd. FM IF	1.8Ω	.4Ω	50C248	16-3487	FM-254	1463	
L11	Ratio Det.	1.8Ω	.8ΩCT	50C560	17-3488 *	FM-255	1465	Tertiary winding-.4Ω
L12	AM Ant. Coil	1.1Ω		51B1605				Tapped ⓐ.1Ω
L13	AM RF Coil	62Ω	7.6Ω	51B1607	14-1027	BC-382	72-RF	
L14	AM Osc. Coil	3.8Ω		51B1608			71-Osc.	Tapped ⓐ.3Ω
L15	1st. AM IF	17.5Ω	17.5Ω	50C244	16-6758	BC-352	12-C1	
L16	2nd. AM IF	16Ω	17Ω	50C247	16-6758	BC-353	12-C2	

* Drill mounting holes.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L17		142Ω	1.66 Hy.	56B160				

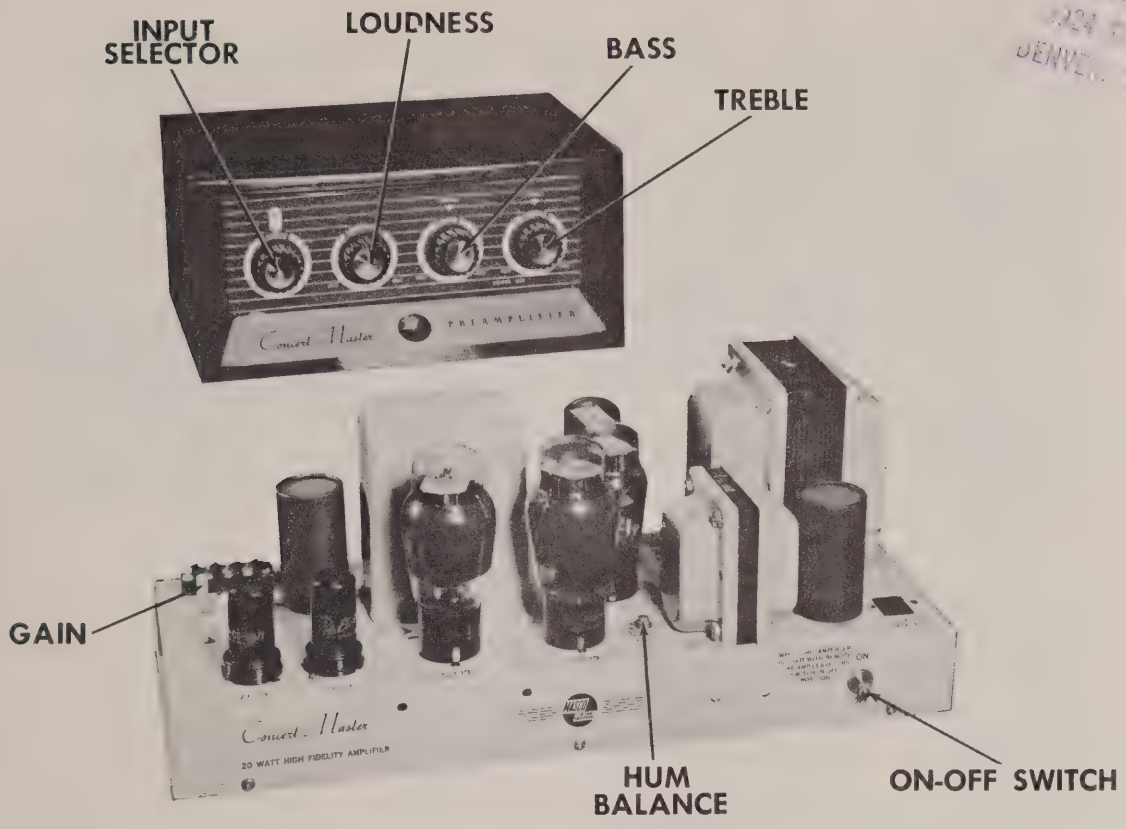
MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M1	Dial Light	39A003	Type #44 (2 Used)
M2	Tuning Capacitor	47C298	27-340MMF, 27-340MMF, 18-130MMF (Includes 3 gang FM Cap.)
M3	Switch	60B511	Function Selector
M4	Switch	60A381	Pickup Selector
A19	Trimmer Cap.	44B232	10KC Filter, 10-160MMF
	Dial Glass	22-384	Calibrated
	Pointer	82B230	
	Front Panel	68D216	
	Top Cover	66D906	
	Knob	15B322	Tuning
	Knob		Off/On/Volume, Function selector, treble, bass (4 Used)

MASCO
MODELS CM-20, PR-1

PROPERTY OF
SLA...
224 ...
DENVE...

MASCO
MODELS CM-20, PR-1



MASCO
MODELS CM-20, PR-1

TRADE NAME	Masco Models CM-20 (Power Chassis), PR-1 (Pre-Amp. Chassis)
MANUFACTURER	Mark Simpson Mfg. Co., 32-08 Forty-ninth St., Long Island City 3, N.Y.
TYPE SET	AC Operated 20 Watt Audio Amplifier with Remote Pre-Amplifier
TUBES (Nine)	Types 12AX7 Pre-Amp., (2) 12AU7 AF Amp., 6SJ7 AF Amp., 6SJ7 Phase Inv., (2) 6L6G Audio Output, (2) 5V4G Rectifiers
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.3 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS
MODEL PR-1
TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V1	Pre-Amplifier	12AX7	12AX7	9A	
V2	AF Amplifier	12AU7	12AU7	9A	
V3	AF Amplifier	12AU7	12AU7	9A	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450		AFH2-56		BO44		FP396.2	TVL-3780	
B	▲20	450								
C2A	▲40	450		AFH2-56		BO44		FP396.2	TVL-3780	
B	▲20	450								
C3	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C4	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C5	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C6	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C7	1000	500		1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C8	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C9	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C10	82			SI82	D6-820		GP1K-820		5GA-Q82	
C11	.03	600		P688-03		PTE6S3		PT613	6TM-S3	
C12	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C13	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C14	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C15	10000			BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C16	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C17	.03	600		P688-03		PTE6S3		PT613	6TM-S3	
C18	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	BA012-229	Q13-133	AG-60-Z	B-60-S	U-48	Treble
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	BA011-547	Q13-133	AG-60-Z	B-60	U-48	Bass
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½		Q11-133				Loudness
B	1Meg	½		M13-137				
C	100KΩ	½		M13-128				
D	Shaft			PQ				
R4	500KΩ	.1						Auxiliary #1
R5	500KΩ	.1						Auxiliary #2
R6	500KΩ	.1						Radio

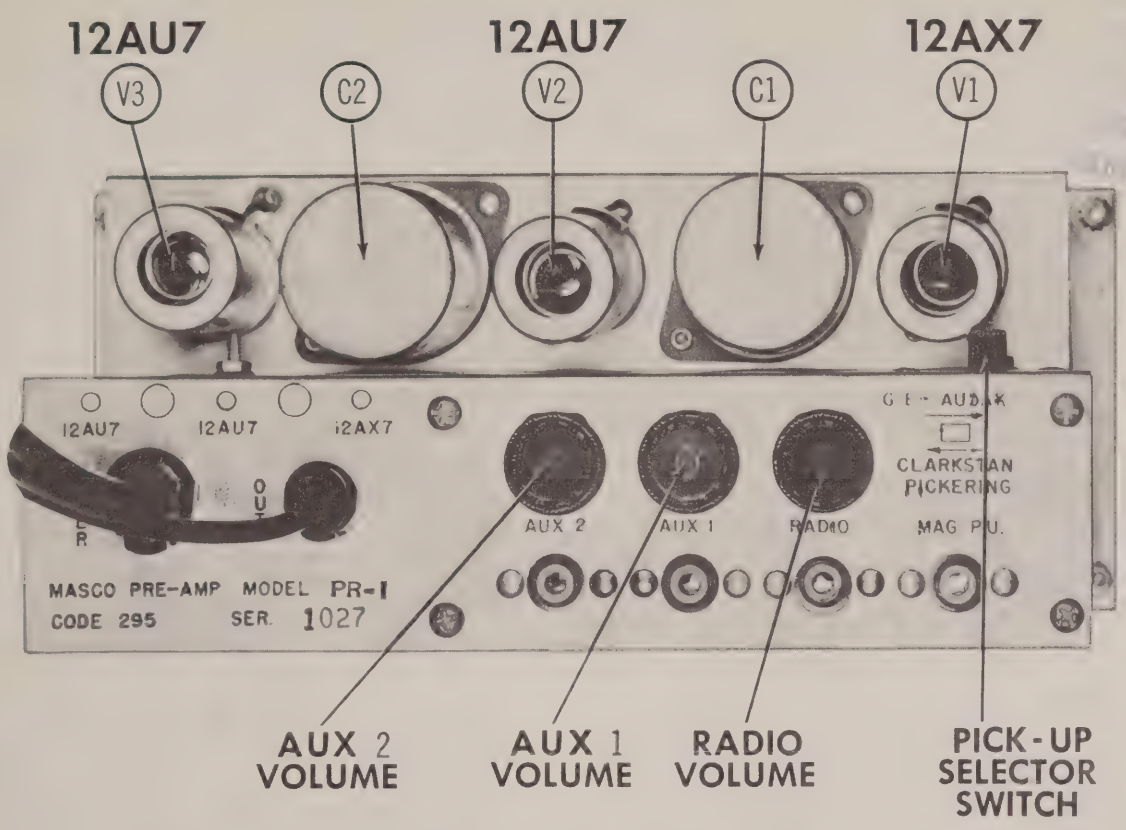
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R7	27KΩ	½		BTS-27K	
R8	27KΩ	½		BTS-27K	
R9	47KΩ	½		BTS-47K	
R10	4700Ω	½		BTS-4700	
R11	100KΩ	½		BTS-100K	
R12	100KΩ	½		BTS-100K	
R13	470KΩ	½		BTS-470K	
R14	4700Ω	½		BTS-4700	
R15	100KΩ	½		BTS-100K	
R16	100KΩ	½		BTS-100K	
R17	27KΩ	½		BTS-27K	
R18	100KΩ	½		BTS-100K	
R19	150KΩ	½		BTS-150K	
R20	100KΩ	½		BTS-100K	
R21	10Meg	½		BTS-10Meg	

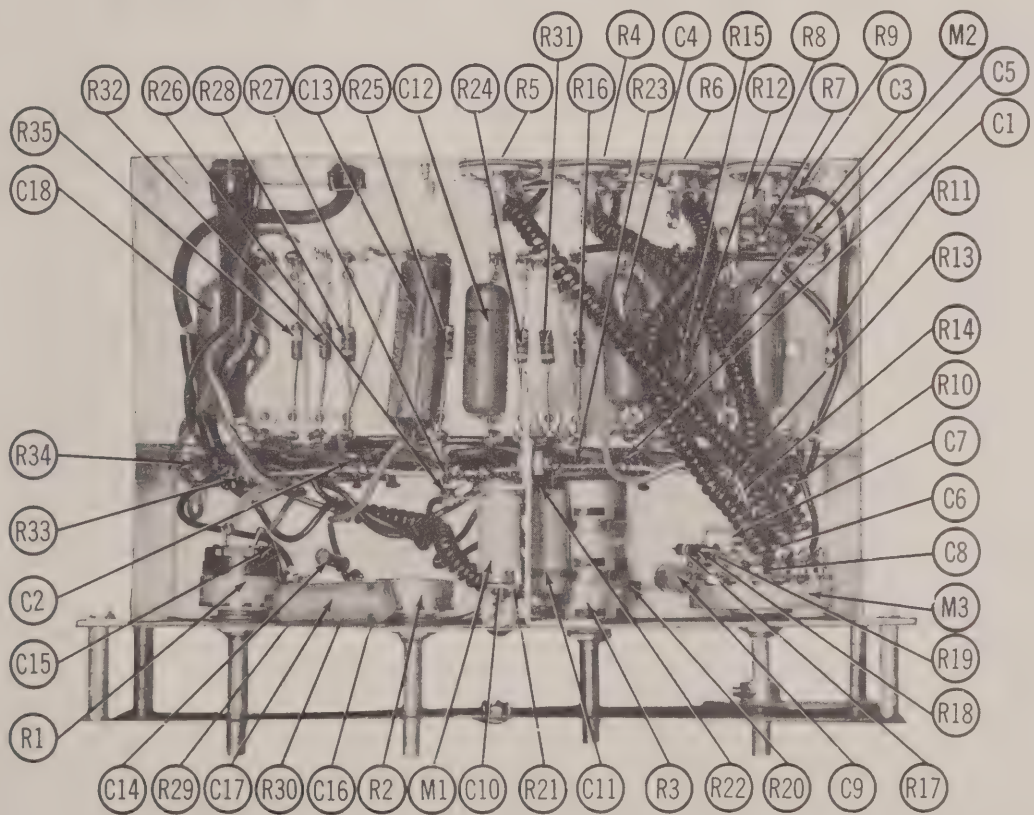
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R22	10KΩ	½		BTS-10K	
R23	1500Ω	½		BTS-1500	
R24	47KΩ	½		BTS-47K	
R25	47KΩ	½		BTS-47K	
R26	470KΩ	½		BTS-470K	
R27	470Ω	½		BTS-470	
R28	47KΩ	½		BTS-47K	
R29	10KΩ	½		BTS-10K	
R30	150KΩ	½		BTS-150K	
R31	47KΩ	½		BTS-47K	
R32	15KΩ	½		BTS-15K	
R33	2700Ω	½		BTS-2700	
R34	10KΩ	½		BTS-10K	
R35	100KΩ	½		BTS-100K	

MISCELLANEOUS

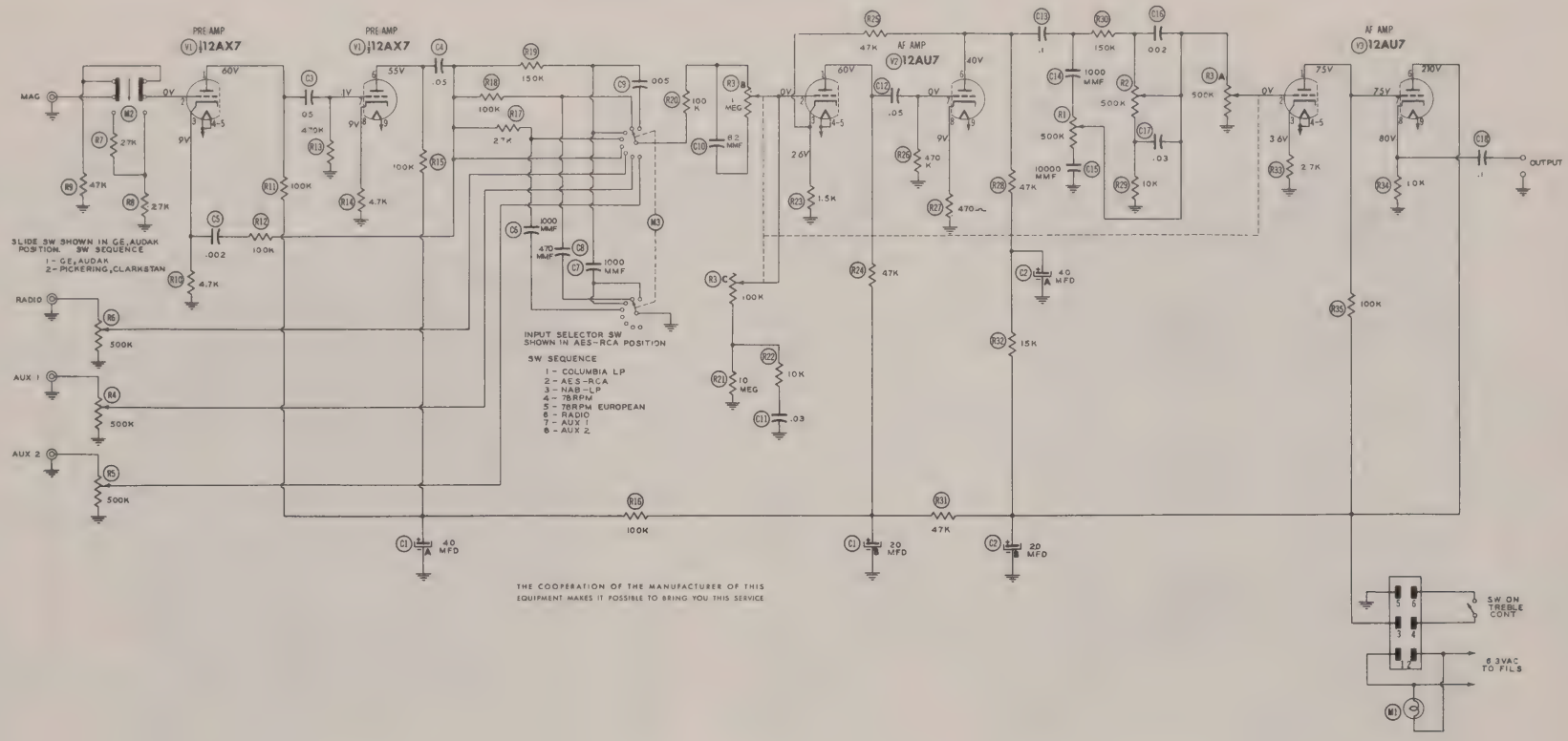
ITEM No.	PART NAME	MASCO PART No.	NOTES
M1	Pilot Light		Type #47
M2	Switch		Pick-up Selector
M3	Switch		Input Selector



REAR VIEW - MODEL PR-1



BOTTOM VIEW - MODEL PR-1


PRE-AMP V1 12AX7
PRE-AMP V1 12AX7
AF AMP V2 12AU7
AF AMP V3 12AU7
MAG
RADIO
AUX 1
AUX 2
SLIDE SW SHOWN IN GE-AUDAK POSITION SW SEQUENCE
1 - GE, AUDAK
2 - PICKERING, CLARK & TAN
INPUT SELECTOR SW SHOWN IN AES-RCA POSITION
SW SEQUENCE
1 - COLUMBIA LP
2 - AES-RCA
3 - NAB-LP
4 - 78RPM
5 - 78RPM EUROPEAN
6 - RADIO
7 - AUX 1
8 - AUX 2
OUTPUT
SW ON TREBLE CONT
6.3VAC TO FILS
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†250KΩ	47KΩ	4.7KΩ	210Ω	210Ω	†250KΩ	470KΩ	4.7KΩ	210Ω
V 2	12AU7	†100KΩ	10Meg	1.5KΩ	210Ω	210Ω	†32KΩ	470KΩ	470Ω	210Ω
V 3	12AU7	†105KΩ	20Ω	2.7KΩ	210Ω	210Ω	†7KΩ	†105KΩ	10KΩ	210Ω

ALL MEASUREMENTS TAKEN WITH ALL CONTROLS AT MINIMUM, PICK-UP SELECTOR IN #1 POSITION, INPUT SELECTOR IN "COLUMBIA LP" POSITION.
† MEASURED FROM PIN #8 OF V9.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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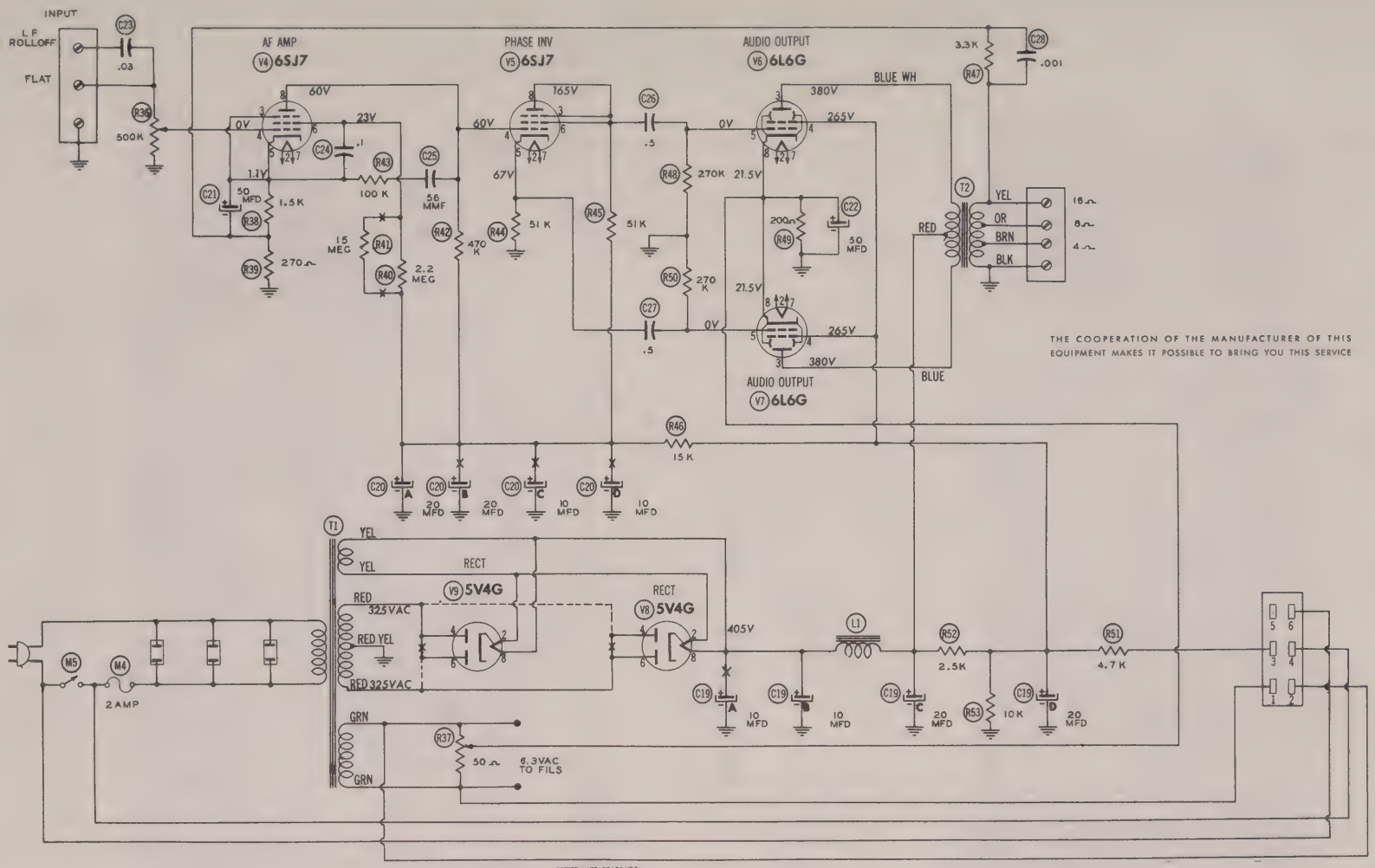

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 4	6SJ7	0Ω	210Ω	1.7KΩ	20Ω	1.7KΩ	†2Meg	210Ω	†490KΩ
V 5	6SJ7	0Ω	210Ω	†70KΩ	†490KΩ	51KΩ	†70KΩ	210Ω	†70KΩ
V 6	6L6G	0Ω	210Ω	†280Ω	†2.6KΩ	270KΩ	51KΩ	210Ω	300Ω
V 7	6L6G	0Ω	210Ω	†300Ω	†2.6KΩ	270KΩ	INF	210Ω	200Ω
V 8	5V4G	INF	11KΩ	INF	21.5Ω	INF	21.5Ω	INF	11KΩ
V 9	5V4G	210Ω	11KΩ	†130Ω	INF	210Ω	20Ω	210Ω	11KΩ

ALL MEASUREMENTS TAKEN WITH ALL CONTROLS AT MINIMUM, PICK-UP SELECTOR IN #1 POSITION INPUT SELECTOR IN "COLUMBIA LP" POSITION.
† MEASURED FROM PIN #8 OF V9.

1 - DC Voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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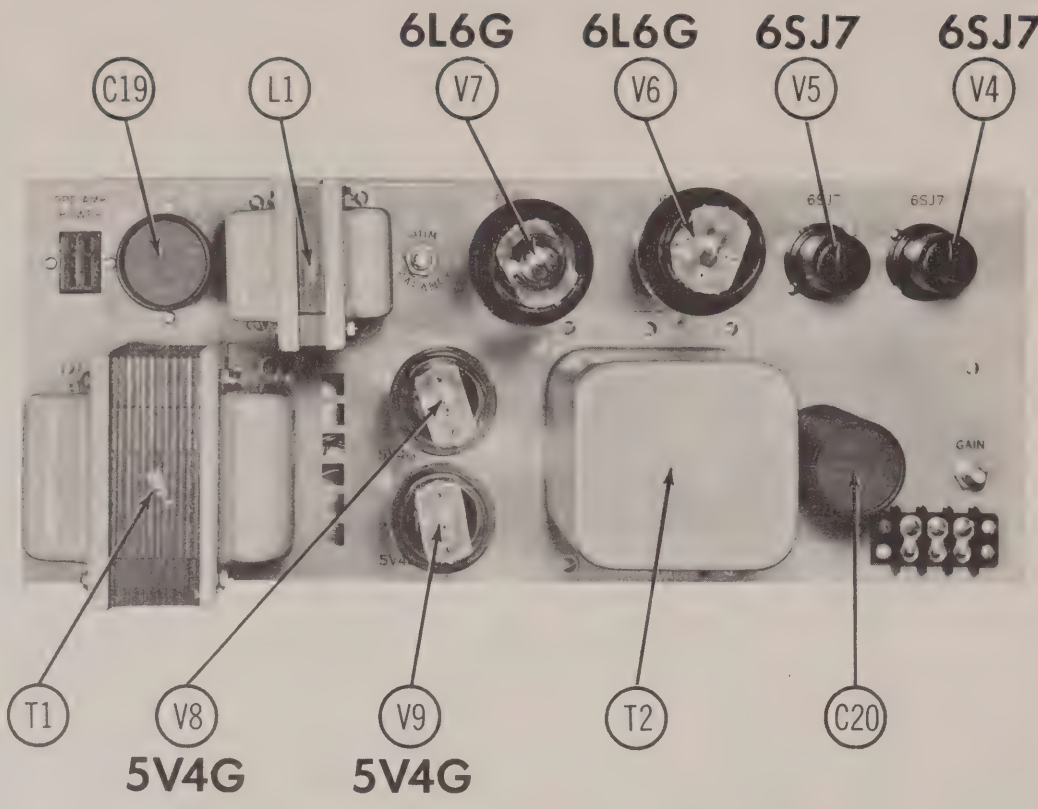
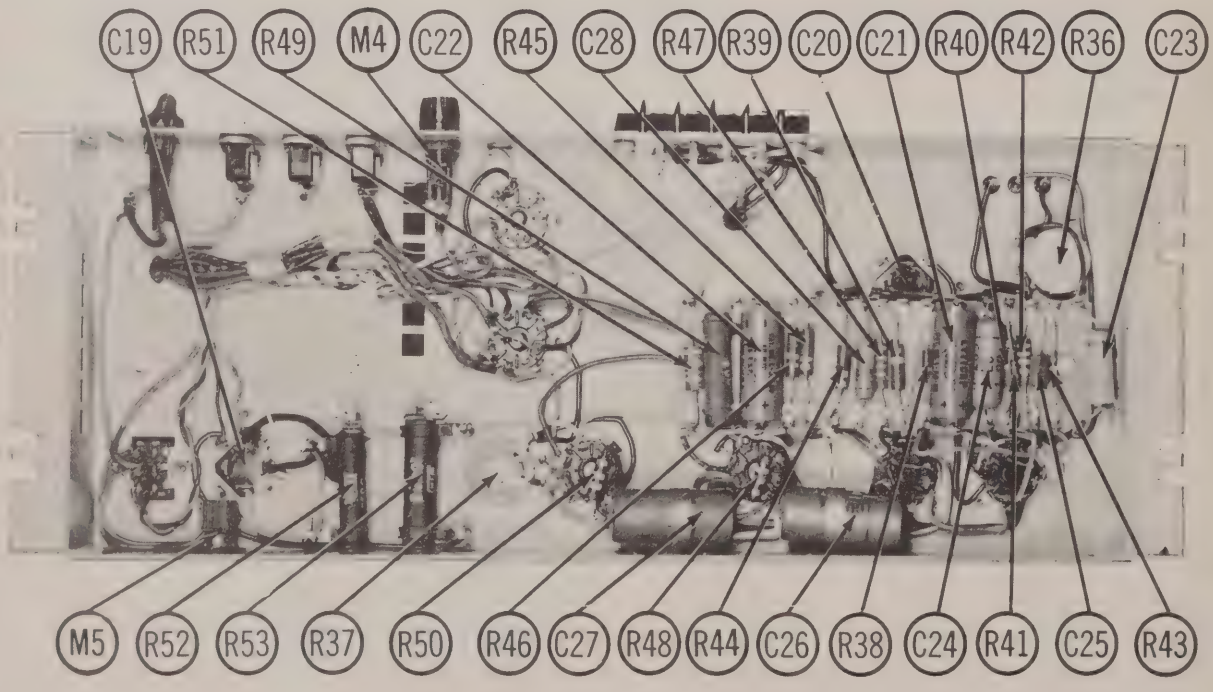
MODEL CM-20
218-6



TOP VIEW - MODEL CM-20



BOTTOM VIEW - MODEL CM-20

PARTS LIST AND DESCRIPTIONS
MODEL CM-20

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V4	AF Amplifier	6SJ7	6SJ7	8N	
V5	Phase Inverter	6SJ7	6SJ7	8N	
V6	Audio Output	6L6G	6L6G	7S	
V7	Audio Output	6L6G	6L6G	7S	
V8	Rectifier	5V4G	5V4G	5L	
V9	Rectifier	5V4G	5V4G	5L	

CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C19A	▲10	450		AFH3-36		CO27		FP376.5	TVL-3780	Note 1
B	10	450								Note 1
C	▲20	450								
D	■20	450								
C20A	▲20	450		AFH1-54		A050		FP376.5	TVL-3780	Note 2
B	■20	450								Note 2
C	▲10	450								Note 2
D	10	450								Note 2
C21	50	50		PRS50/50		BR505		TC39	TVA-1308	
C22	50	50		PRS50/50		BR505		TC39	TVA-1308	
C23	.03	600		P688-03		PTE6S3		PT613	6TM-S3	
C24	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C25	56	500								
C26	.5	400		P488-5		PTE4P5		PT405	4TM-P5	
C27	.5	400		P488-5		PTE4P5		PT405	4TM-P5	
C28	.001	600		P688-001	D6-102	PTE6D1		PT621	6TM-D1	

Note 1. Some Models combine C19A and C19B in one section.
Note 2. Some Models combine C20A, C20B, C20C, C20D in single section unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R36A	500KΩ	½	33-010-188	Q13-133	AG-60-Z	B-60	U-48	Gain
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R36A
R37A	50Ω	2			A43-50		R50L *	Hum Balance-wire wound
B	Shaft				FKS-1/4		Not Req.	Attach to R37A

* Use Mallory washers #203 and #212 to insulate control from chassis.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R38	1500Ω	½		BTS-1500	
R39	270Ω	1		BTA-270	
R40	2.2Meg	1		BTA-2.2Meg	
R41	15Meg	½		BTS-15Meg	Note
R42	470KΩ	1		BTA-470K	
R43	100KΩ	½		BTS-100K	
R44	51KΩ 5%	1		BTA-51K 5%	
R45	51KΩ 5%	1		BTA-51K 5%	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R46	15KΩ	1		BTA-15K	
R47	3300Ω	1		BTA-3300	
R48	270KΩ	1		BTA-270K	
R49	200Ω	10		1 3/4A-200	
R50	270KΩ	1		BTA-270K	
R51	4700Ω	2		BTB-4700	
R52	2500Ω	10		1 3/4A-2500	
R53	10KΩ	20		2D-10K	

Note: Not used in all Models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @1.22A	650VCT .140ADC	5VAC @ 6A	6.3VAC @3.6A		P-3169 ①②③		R-16A ①	

① Drill new mounting holes.
② Parallel 5 V windings.
③ Use low taps on high voltage secondary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	6KΩ CT	16Ωtap @ 8Ω, 4Ω	320Ω CT	1.2Ω tap @ .85Ω .46Ω		A-3307 ①	A-3101①②	PCO-80①	S-35A ①	① Drill new mounting holes. ② Use low primary taps, tape extra leads.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.140ADC	130Ω	6.25 Hy.		C-1421 ①		R-7150 ①	C-12A ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MASCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M4	3AG (Slo-Blo)	2A @ 125V			313002 (3AG-2Amp. Slo-Blo)	342003	MDL2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M5	Switch		Off/On

RECORD EQUALIZATION CHART

SELECTOR SWITCH SETTING	RECORD TYPE	TECHNICAL CHARACTERISTICS
1	COLUMBIA LP'S	500 cps turnover, 16 db rolloff at 10 kc, playback equalization for constant velocity below 100 cps.
2	AES (Audio Engineering Society Recording Curve) ALL RCA VICTOR'S (78, 45, LP)	400 cps turnover, 12 db rolloff at 10 kc.
3	NAB (National Association of Broadcasters Recording Curve) MOST RECENT-AMERICAN DISCS (EXCEPT AS NOTED) COLUMBIA 78's LONDON FFRR LP's OLDER AMERICAN LP's	500 cps turnover, 16 db rolloff at 10 kc.
4	DECCA FFRR 78's LONDON FFRR 78's	400 cps turnover, 6 db rolloff at 10 kc.
5	MOST EUROPEAN 78's HMV BRITISH COLUMBIA CAPITOL-TELEFUNKEN OLDER AMERICAN 78's	350 cps turnover, flat at high end.

HUM BALANCE ADJUSTMENT

Replacement of tubes will necessitate readjustment of the Hum Balance Control on the CM-20 Amplifier.
To adjust the Hum Balance Control, turn equipment on, set all controls to maximum, selector switch in Col LP position (no input connected), and readjust the Hum Balance potentiometer with a screwdriver for minimum hum as heard in the speaker.

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MODEL 630-6AB

MATTISON
MODELS 630-6A, 630-6AB

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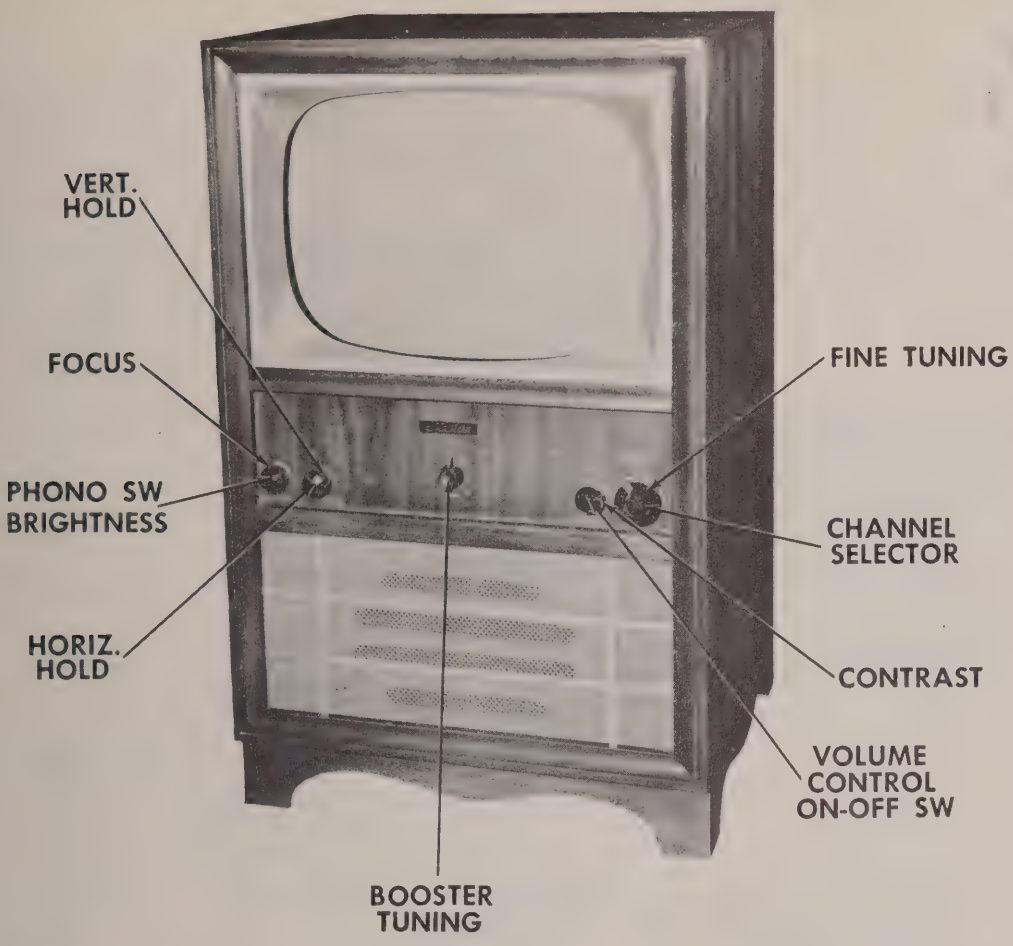

MATTISON
MODELS 630-6A, 630-6AB

MATTISON MODEL 630-6AB

TRADE NAME	Mattison Models 630-6A, 630-6AB.
MANUFACTURER	Mattison Television & Radio Corp., 10 West 181 st. Street, New York 53, N. Y.
TYPE SET	Television Receiver
TUBES	Thirty-two
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.74 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 26.25 MC, Sound IF 21.75 MC (Separate Sound)

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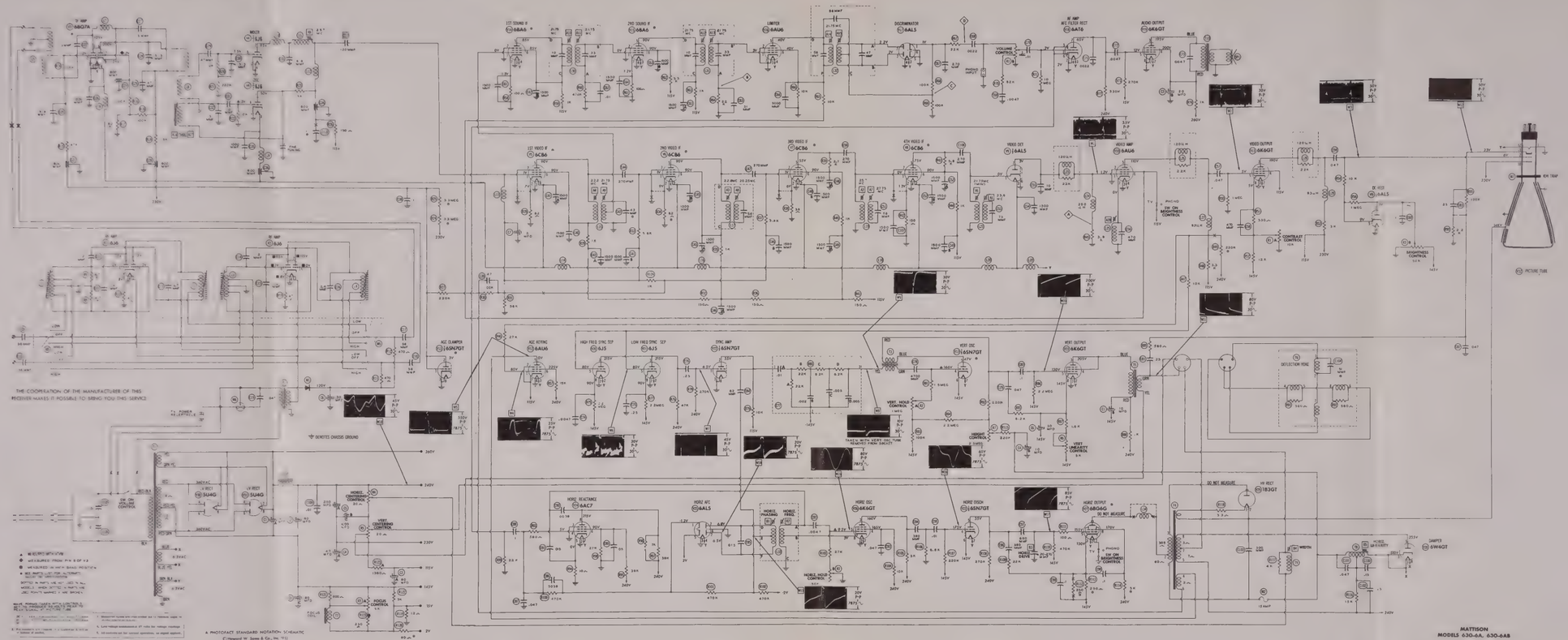
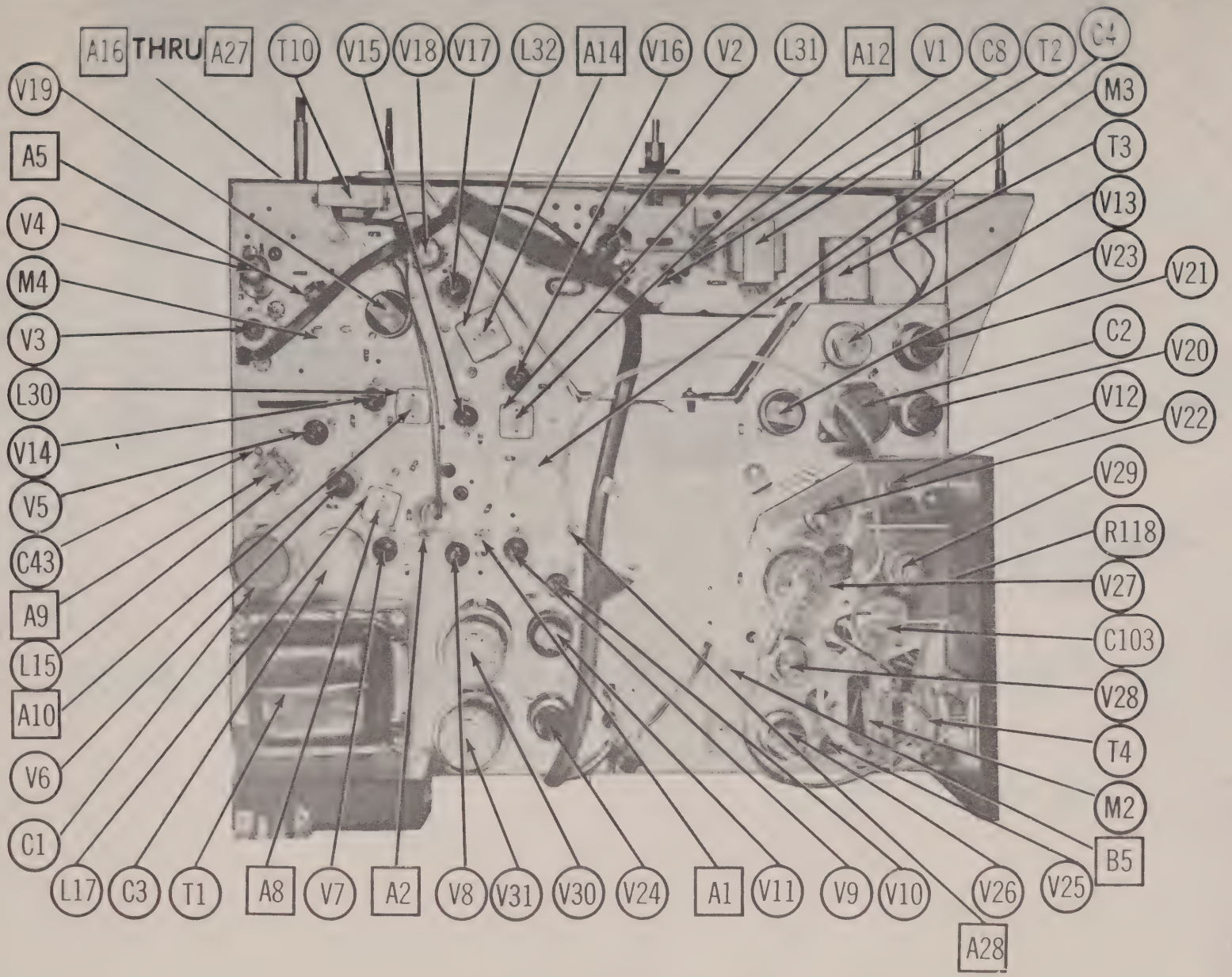
COURTESY OF
J. F. BLANKENSHIP
3324 MISSLE ST.
DENVER, COLORADO

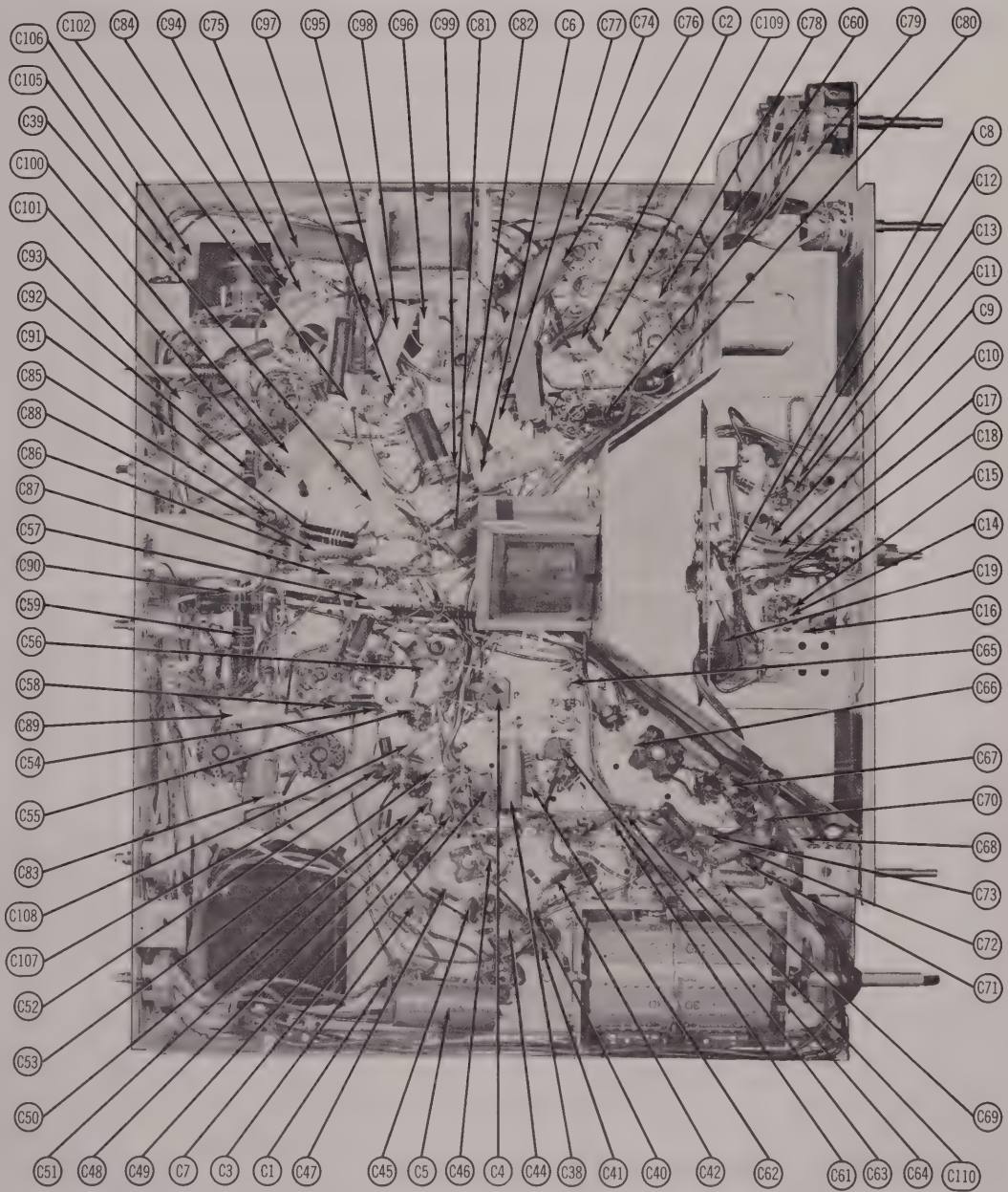

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
"D" DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. '61
MATTISON
MODELS 630-6A, 630-6AB



CHASSIS TOP VIEW

MODELS 630-6A, 630-6AB

MATTISON



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

MODELS 630-6A, 630-6AB

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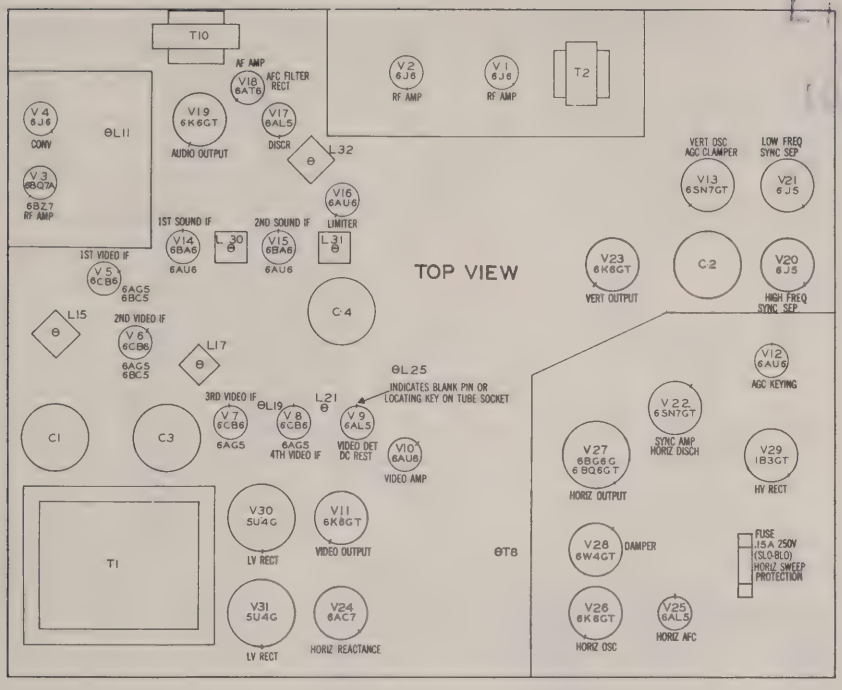
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V30, V31

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V4, V5
No pic, no sound, has snow - V3, V4, V5
No pic, has sound, has raster - V6, V7, V8, V9, V10, V11, V32
Has pic, no sound - V14, V15, V16, V17, V18, V19
Overloaded picture - V12, V13

SYNC FAILURE
No vert. sync - V13, V22, V23
No horiz. sync - V22, V24, V25, V26
No vert. or horiz. sync - V20, V21, V22

SWEEP FAILURE
No raster, has sound - V22, V26, V27, V28, V29, V32, Fuse (M2)
No vertical deflection - V13, V23
Poor vert. linearity or foldover - V13, V23
Poor horiz. linearity or foldover - V22, V26, V27, V28
Narrow picture - V22, V26, V27, V28, V29, V30, V31
Vert. off freq. - V13, V22, V23
Horiz. off freq. -V22, V24, V25, V26

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V26. Turn TV booster to "Off" position.

VIDEO IF ALIGNMENT

Remove the converter tube, V4, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the junction of R30 and R31.
Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	23.9MC (Unmod.)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	25.7MC	"	"	A2	"
3.	"	"	22.3MC	"	"	A3	"
4.	"	"	22.3MC	"	"	A4	"
5.	"	"	25.7MC	"	"	A5	"
6.	"	"	21.75MC	"	"	A6	Adjust for MINIMUM deflection.
7.	"	"	27.75MC	"	"	A7	"
8.	"	"	20.25MC	"	"	A8	"
8.	"	"	21.75MC	"	DC probe to point (B) Common to chassis.	A9	Adjust for maximum deflection. Attenuate generator to maintain not more than 1 volt at VTVM.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24.0MC (10MC Swp)	20.25MC 21.75MC 26.25MC 27.75MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A1 thru A5 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.75MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection. Attenuate generator output to maintain not more than 1 volt at VTVM.
12.	"	"	"	"	DC probe to point (C). Common to chassis.	A14	Adjust for maximum deflection.
13.	"	"	"	"	DC probe to point (D). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.75MC (450KC Swp)	21.75MC	Any	Vert. amp. thru 27KΩ to point (B). Low side to chassis.	A10, A11, A12, A13	Adjust for response curve of maximum amplitude and symmetry as in Fig. 2. Attenuate generator to avoid distortion of response curve.
12.	"	"	"	"	"	Vert. Amp. to point (D). Low side to chassis.	A14, A15	Adjust A14 for maximum amplitude and straightness of crossover lines as in Fig. 3. Adjust A15 so that 21.75MC occurs at center of crossover lines. SLIGHTLY retouch A14 as before. Continue alignment with step 14.

FIG. 1

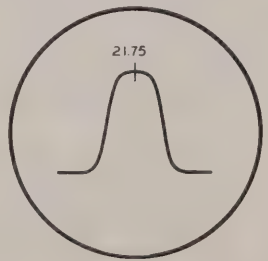


FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through the hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to themmid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point ◇A◇. Low side to chassis.	A16	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A17	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A18	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A19	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A20	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A21	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A22	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A23	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A24	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A25	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A26	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A27	

4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust the fine tuning for best picture and sound. If any evidence of 4.5MC beat interference appears in picture, adjust A28 to minimizer it.

RF ALIGNMENT

The tuner RF section and the booster section of this receiver have been properly aligned at the factory and are very stable. Alignment of these sections should not be required in the field.

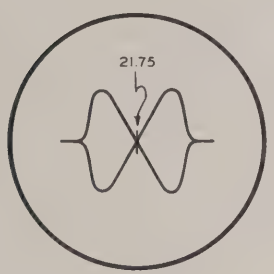


FIG. 3

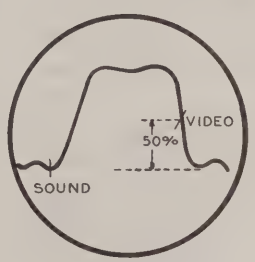


FIG. 4

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	♦235Ω	♦235Ω	.5Ω	0Ω	0Ω	0Ω	47Ω		
V 2	6J6	♦■235Ω	♦■235Ω	.5Ω	0Ω	0Ω	0Ω	47Ω		
V 3	6BQ7A	INF	420KΩ	0Ω	.1Ω	0Ω	†1.6KΩ	†105KΩ	INF	0Ω
V 4	6J6	†16.6KΩ	†1.6KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 5	6CB6	57KΩ	82Ω	0Ω	.1Ω	†2.9KΩ	†2.9KΩ	0Ω		
V 6	6CB6	63KΩ	82Ω	.1Ω	0Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 7	6CB6	60KΩ	39Ω	.1Ω	0Ω	†5.2KΩ	†2.5KΩ	0Ω		
V 8	6CB6	.4Ω	150Ω	.1Ω	0Ω	7.9KΩ	†2.3KΩ	0Ω		
V 9	6AL5	.4Ω	200Ω	.1Ω	0Ω	1Meg	0Ω	3.9KΩ		
V 10	6AU6	3.9KΩ	0Ω	0Ω	.1Ω	†4.7KΩ	†1.4KΩ	.4Ω		
V 11	6K6GT	INF	0Ω	†3.1KΩ	†1.4KΩ	1Meg	2.3KΩ	.1Ω	2.6KΩ	
V 12	6AU6	†32KΩ	†1.4KΩ	.1Ω	0Ω	150KΩ	†15KΩ	†1.4KΩ		
V 13	6SN7GT	380KΩ	380KΩ	0Ω	2.2Meg	‡1.2Meg	850Ω	.1Ω	0Ω	
V 14	6BA6	0Ω	0Ω	0Ω	.1Ω	†2.4KΩ	†2.4KΩ	100Ω		
V 15	6BA6	470KΩ	0Ω	.1Ω	0Ω	†2.4KΩ	†4.7KΩ	100Ω		
V 16	6AU6	22KΩ	0Ω	0Ω	.1Ω	†8.4KΩ	†8.4KΩ	0Ω		
V 17	6AL5	200KΩ	100KΩ	.1Ω	0Ω	0Ω	0Ω	100KΩ		
V 18	6AT6	10Meg	0Ω	.1Ω	0Ω	22KΩ	22KΩ	†330KΩ		
V 19	6K6GT	92Ω	.1Ω	†1.3KΩ	†1KΩ	270KΩ	350KΩ	0Ω	0Ω	
V 20	6J5	0Ω	.1Ω	†47KΩ	INF	†14.7KΩ	†86Ω	0Ω	2.2Meg	
V 21	6J5	0Ω	.1Ω	†47KΩ	INF	†14.7KΩ	†66Ω	0Ω	2.2Meg	
V 22	6SN7GT	†270KΩ	†1KΩ	0Ω	220KΩ	†270KΩ	850Ω	.1Ω	0Ω	
V 23	6K6GT	51KΩ	.1Ω	†1.6KΩ	†1.6KΩ	2.2Meg	850Ω	0Ω	5KΩ	
V 24	6AC7	0Ω	0Ω	0Ω	1.4Meg	10Ω	†19KΩ	.1Ω	†21KΩ	
V 25	6AL5	940KΩ	470KΩ	0Ω	.1Ω	12Ω	0Ω	470KΩ		
V 26	6K6GT	INF	0Ω	†5.1KΩ	†10KΩ	72KΩ	‡ 5.4Ω	.1Ω	9.5Ω	
V 27	6BG6G	INF	.1Ω	975Ω	INF	470KΩ	470KΩ	0Ω	†5.1KΩ	TOP CAP ‡ 66Ω
V 28	6W4GT	†66Ω	INF	30KΩ	†70Ω	†76Ω	†73Ω	‡ .2Ω	‡0Ω	
V 29	1B3GT	PINS 1 - 8 HAVE INFINITE RESISTANCE								TOP CAP ‡370Ω
V 30	5U4G	INF	15KΩ	INF	868Ω	INF	870Ω	280Ω	15KΩ	
V 31	5U4G	INF	15KΩ	INF	868Ω	INF	870Ω	INF	15KΩ	
V 32	20"	0Ω	1Meg	PIN 10 †104Ω	PIN 11 102KΩ	PIN 12 .1Ω				

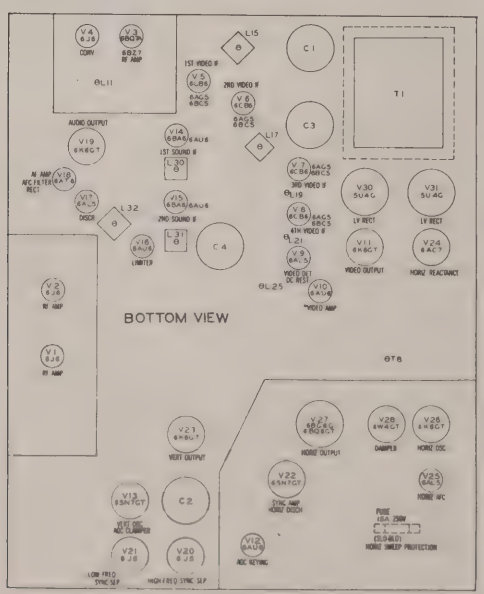
ALL MEASUREMENTS TAKEN WITH BOOSTER IN "LOW BAND" POSITION

■ BOOSTER IN "HIGH BAND" POSITION.

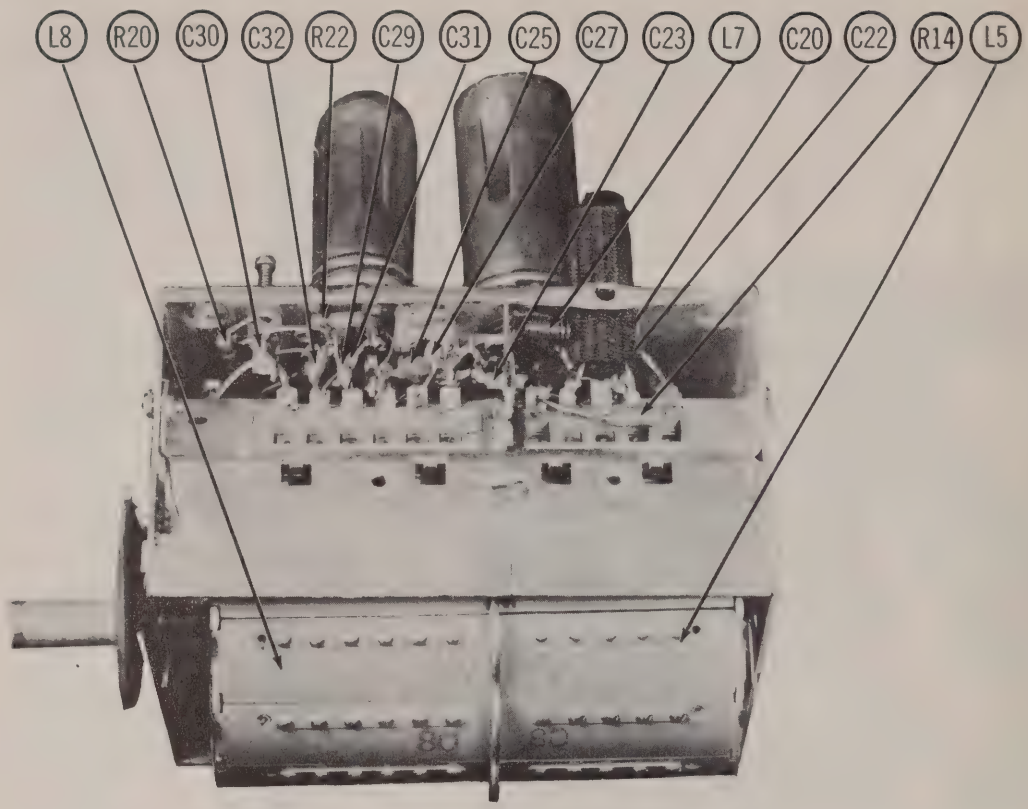
† MEASURED FROM PIN #8 OF V31.

‡ MEASURED FROM PIN #3 OF V28.

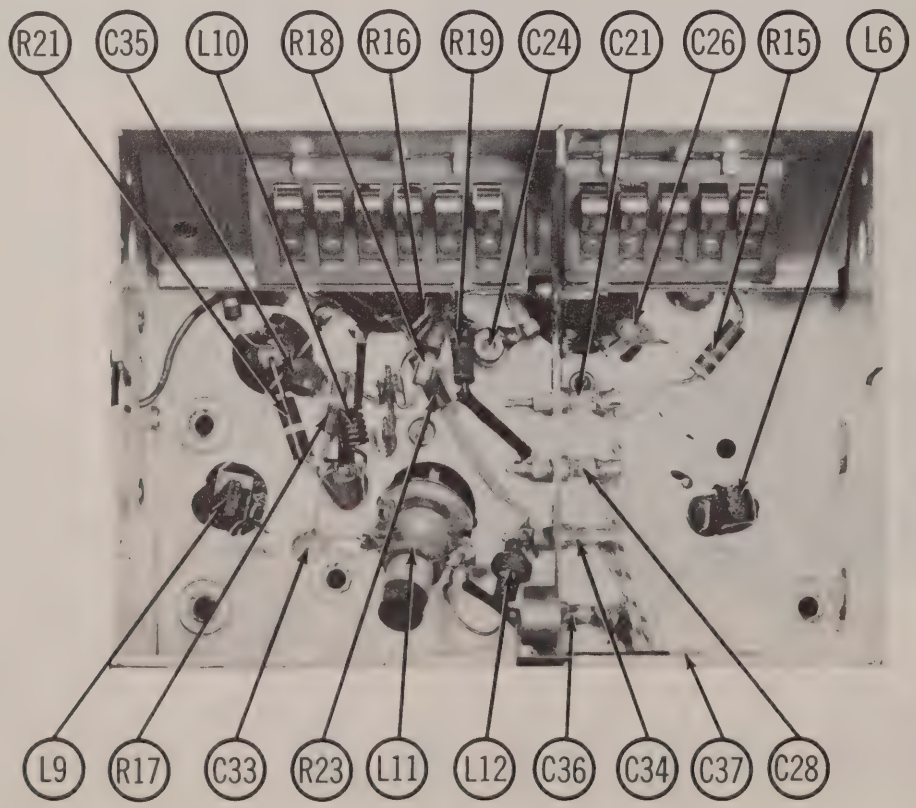
♦ MEASURED FROM OUTPUT OF M1.



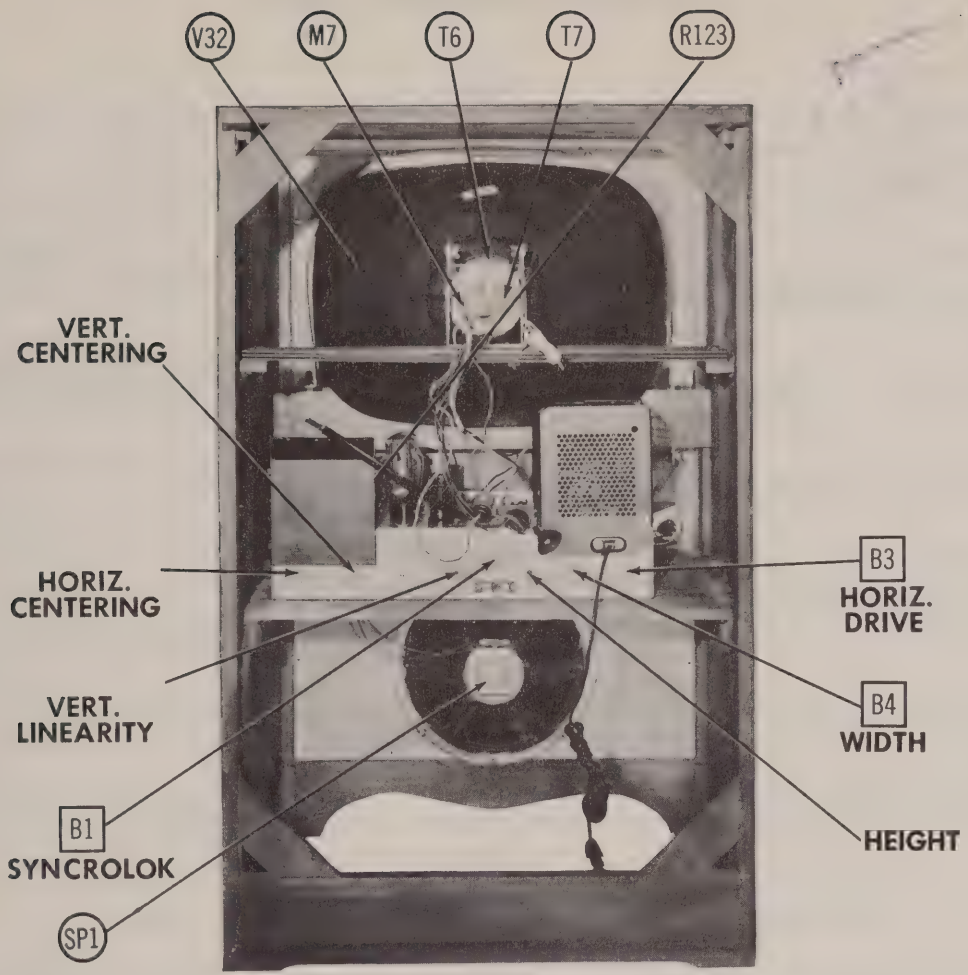
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the contrast control to slightly less than normal contrast.

If blanking bar appears at the right of the picture adjust the horizontal phasing slug (B1) until blanking bar moves off the raster to the right.

Turn the horizontal hold control fully counter clockwise and adjust the horizontal frequency slug (B2) until picture falls out of sync, then reverse the adjustment until picture just synchronizes.

Readjust B1 so that left side of the picture is close to left side of raster, but does not foldover.

Turn the horizontal hold control fully clockwise. The right side of picture should be near the right side of the raster, but should not foldover. If it does, readjust B1.

Momentarily,remove the signal by switching off channel and back again. If it does not, readjust B2 until picture synchronizes.

Turn the horizontal hold control fully counter clockwise. Picture should return to sync after momentarily removal of the signal.

Adjust the horizontal drive trimmer (B3) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture. Adjust the width slug (B4) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B5) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V22, V26, V27, V28, V30 and V31. Check adjustment of horizontal linearity coil (B5) width coil (B4) and horizontal drive (B3). Check waveform at W17.

If Satisfactory	If Unsatisfactory
Check C100, C101, C102, T4, T6A, T8, T9 and other associated components.	Check C96, C97, C94, C95, R108, R110, R104, R105 and other associated components.

DRIVE LINES

Check by substitution V22, V27 and V28. Check adjustment of horizontal drive (B3). Check C97, C98, C101, C100, C102, T4, T6A and other associated components.

COMPRESSED LEFT SIDE

Check, by substitution, V22, V26, V27 and V28. Check adjustment of horizontal drive (B3), width (B4), and horizontal linearity (B5). Check components associated with these stages especially T4, T6A, C100, C101, C102, C96, C97 and C98.

FOLDS

Check, by substitution, V22, V27 and V28. Check C96, C97, C100, C101, C102, T4, T6A and other associated components.

XMAS TREE EFFECT

Check, by substitution, V22, V24 and V26 . Check components associated with these stages especially C92, C94, C90, C91 and L33.

VERTICAL

LOSS OF SWEEP

Check, by substitution, V13 and V23. Check waveform at W10.

If Satisfactory	If Unsatisfactory
Check T5, T6B, R5, R88 and other associated components.	Check C78, C79, and C80. Check T3 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V13 and V23. Check adjustment of vertical linearity and height controls, readjust vertical centering control if necessary to maintain vertical linearity. Check components associated with V13B and V23.

COMPRESSED AT BOTTOM

Check, by substitution, V13 and V23. Check components associated with these stages especially C1B, C6 and T5.

COMPRESSED AT TOP

Check, by substitution, V13 and V23. Check T3, T5, C1B, C6, C79, C80, T6B and other associated components.

FOLDS

Check, by substitution, V13 and V23. Check components associated with these stages especially all grid load resistors and coupling capacitors.

SYNC

HORIZONTAL

LOSS OF SYNC

Check, by substitution, V24, V25 and V26. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check L33, C92, R103, R2B and other associated components. Check components associated with V24.	Check C84 and components associated with V22A.

CRITICAL HOLD

Check, by substitution, V20, V24, V25 and V26. Check components associated with these stages.

PULLING PICTURE

Check by substitution V20, V24, V25, V26, V22 and V27. Check signal at W6 for 60 cycle modulation.

If Present	If Absent
Check video IF, amplifier and detector stages for heater to cathode leakage.	Check components associated with the horizontal oscillator and control circuits.

VERTICAL

LOSS OF SYNC

Check , by substitution, V21, V22, V13 and V23. Check waveform at W7.

If Satisfactory	If Unsatisfactory
Check vertical integrator network. Check components associated with V13B.	Check video stages for signal overload and sync compression.

CRITICAL HOLD

Proceed as outlined under "Loss of Sync".

TRIGGERING

Check, by substitution, V13, V21, V22 and V23. Check circuit near the stages for filament lead dress.

VIDEO

SOUND BARS

Check adjustment of local oscillator. Check 4.5MC trap alignment (A28). Check video IF alignment.

POOR RESOLUTION

Check,by substitution, V6, V7, V8, V9, V10 and V11. Check all bypass and coupling capacitors. Check video IF alignment.

LOSS OF VIDEO

Check, by substitution V6, V7, V8, V9, V10 and V11. Check components associated with these stages especially all bypass and coupling capacitors.

NEGATIVE PICTURE

Check V6, V7, V8, V9, V10 and V11. Check associated circuit components for change of value.

POOR CONTRAST

Check, by substitution, V6, V7, V8, V9, V10 and V11. Check components associated with video amplifier and detector stages.

SMEAR

Check, by substitution, V9, V10 and V11. Check L23, L26 and L28. Check R48, R50, R53, R54 and R56 for change of value. Check C57 and C59 for leakage. Check other associated components including picture tube.

ONE BLACK BAR ACROSS PICTURE

Check tuner, video IF, video detector and video amplifier tubes for heater to cathode leakage.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		MATTISON PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6J6	6J6	7BF	* On chassis under Serial #25000 the AGC Delay
V2	RF Amplifier	6J6	6J6	7BF	is not used and a 6J5 is used as Vert. Oscillator
V3A	RF Amplifier	6BQ7A	6BQ7A	9AJ	
B	RF Amplifier	6BZ7	6BZ7	9AJ	
V4	Converter	6J6	6J6	7BF	
V5A	1st. Video IF Amp.	6CB6	6CB6	7CM	
B	1st. Video IF Amp.	6AG5	6AG5	7BD	
C	1st. Video IF Amp .	6BC5	6BC5	7BD	
V6A	2nd. Video IF Amp.	6CB6	6CB6	7CM	
B	2nd. Video IF Amp.	6AG5	6AG5	7BD	
C	2nd. Video IF Amp.	6BC5	6BC5	7BD	
V7A	3rd. Video IF Amp.	6CB6	6CB6	7CM	
B	3rd. Video IF Amp.	6AG5	6AG5	7BD	
C	3rd. Video IF Amp.	6BC5	6BC5	7BD	
V8A	4th. Video IF Amp.	6CB6	6CB6	7CM	
B	4th. Video IF Amp.	6AG5	6AG5	7BD	
C	4th. Video IF Amp.	6BC5	6BC5	7BD	
V9	Video Detector- DC Restorer	6AL5	6AL5	6BT	
V10	Video Amplifier	6AU6	6AU6	7BK	
V11	Video Output	6K6GT	6K6GT	7S	
V12	AGC Keying	6AU6	6AU6	7BK	
V13 *	AGC Clamper - Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V14A	1st. Sound IF Amp.	6BA6	6BA6	7BK	
B	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V15A	2nd. Sound IF Amp.	6BA6	6BA6	7BK	
B	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V16	Limiter	6AU6	6AU6	7BK	
V17	Discriminator	6AL5	6AL5	6BT	
V18	AF Amplifier- AFC Filter Rect.	6AT6	6AT6	7BT	
V19	Audio Output	6K6GT	6K6GT	7S	
V20	High Freq. Sync Separator	6J5	6J5	6Q	
V21	Low Freq. Sync Separator	6J5	6J5	6Q	
V22	Sync Amplifier Horiz. Discharge	6SN7GT	6SN7GT	8BD	
V23	Vert. Output	6K6GT	6K6GT	7S	
V24	Horiz. Reactance	6AC7	6AC7	8N	
V25	Horiz. AFC	6AL5	6AL5	6BT	
V26	Horiz. Oscillator	6K6GT	6K6GT	7S	
V27A	Horiz. Output	6BG6G	6BG6G	5BT	
B	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V28	Damper	6W4GT	6W4GT	4CG	
V29	HV Rectifier	1B3GT	1B3GT	3C	
V30	LV Rectifier	5U4G	5U4G	5T	
V31	LV Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MATTISON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450		AFH3-146		C105		FP370	TVL-3761	
B	■10	450								
C	▲80	150								
C2	80	450		AFH1-55		A051		FP149	TVL-1735	
C3A	▲80	350		AFH2-95		B068		FP235	TVL-2730	
B	▲20	450								
C4A	▲40	450		AFH3-154		C040		FP396.2	TVL-3772	
B	■10	450								
C	▲10	350								
C5A	250	12		PRS12/250		BRH1225A			TVA-1131	Red
B	1000	6		PRS6/1000		BRH610			TVA-1104	
C6	50	50		PRS50/50		BR505		TC39	TVA-1308	
C7	2	50		PRS150/4		BBR-2-50T		TC302	TVA-1301	
C8	30	150		AFH1-28		A018		FP113		
C9	56	500								
C10	56	500								
C11	1.2			SI1.2NP0	TCZ-1.2		NP0K-1R2	ZT-5512	5TCCB-V12	
C12	1.2			SI1.2NP0	TCZ-1.2		NP0K-1R2	ZT-5512	5TCCB-V12	
C13	2.7									
C14	1.2			SI1.2NP0	TCZ-1.2		NP0K-1R2	ZT-5512	5TCCB-V12	
C15	1.2			SI1.2NP0	TCZ-1.2		NP0K-1R2	ZT-5512	5TCCB-V12	
C16	2.4									
C17	56	500								
C18	56	500								
C19	.047	400		489ZX-05		PJ4S47		PT4147	4TM-S47	
C20	3-9				829-10					
C21	800			CN-1-001	MFT-1000				503C-D1	
C22	3			SI3NP0	TCZ-3.3		NP0K-030	ZT-5533	5TCCB-V33	
C23	800			CN-1-001	MFT-1000				503C-D1	
C24	.5-3				829-3			CT565A		
C25	47			BPD-000047	D6-471		GP1K-470	UC-5447	5GA-Q47	
C26	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C28	800			CN-1-001	MFT-1000				503C-D1	
C29	47			BPD-000047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C30	.5-3				829-3			CT565A		
C31	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C32	5			SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C33	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C34	800			CN-1-001	MFT-1000				503C-D1	
C35	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C36	800			CN-1-001	MFT-1000				503C-D1	
C37	120			BPD-00012	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C38	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	MATTISON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C39	.47	200		P288-47		P2P5		PT405	2TM-P47	
C40	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C41A	1500			BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C42A	1500			BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C43	43									
C44	270	500								
C45A	1500			BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C46A	1500			BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C47	270	500								
C48A	1500			BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C49A	1500			BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C50	270	500								
C51	56			SI56	D6-560		GP1K-560	UC-5456	5GA-Q56	
C52A	1500			BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C53	75			SI75NP0	TCZ-75		NP0L-750	ZT-5475	5TCC-Q75	
C54	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C55	10			SI10	D6-100	5W5Q1	GP1K-100	UC-541	5GA-Q1	
C56	470	500								
C57	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C58	470	500								
C59	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C60	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C61	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C62	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C63A	1500			BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C64	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C65	51									
C66	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C67	270	500								
C68	.0022	400		P488-0022	D6-222	PTE4D22	GP2-333-222	PT6222	6TM-D22	
C69	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C70	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C71	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C72	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C73	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C74	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C75	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C76	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C77A	.01			P688-01		PTE6S1	GP2-333-103	PT611	6TM-S1	
B	.002			P688-002		PTE6D2	GP2-333-302	PT622	6TM-D2	
C	.005		●PC-101	P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
D	.005			P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
C78	4700	500		1464-005		IDR5D5		MCB465	MB-25	
C79	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C80	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C81	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C82	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C83	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C84	82	500								
C85	.005	400								
C86	.0039	600								
C87	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C88	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C89	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C90	.0039	400								
C91	.015	400								
C92	.0047	400		1464-005		IDR5D5		MCB465	MB-25	
C93	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C94	390	500		1468-0004		SR5T4		MCB343	MB-34	
C95	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C96	390	500		1469-0004		SR5T4		MCB343	MB-34	
C97	680	500		1479-0007		2R5T7			MB-37	
C98	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C99	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C100	.15	600		P688-15		PTE6S15		PT6015	6TM-P15	
C101	.047	600		P688-047		PTE6S47		PT6147	6TM-S47	
C102	.25	600		684-25		PTE6P25		PT6025	6TM-P25	
C103	1000	20000		EY30C	TV3-502	MM-C20T5	413-501	HV20035A	30DE-T5	
C104	51									Note 2
C105	.01	400		489ZK-01		PJ4S1		PT411	4TM-S1	
C106	.01	400		489ZK-01		PJ4S1		PT411	4TM-S1	
C107	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C108	270	500								
C109	.01	400		P488-01	D6-103	PTE4S1		PT411	4TM-S1	
C110	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	Note 3

Note 1. Some Models use 68MMF in this application.
Note 2. Some Models use 56MMF in this application.
Note 3. Not used in all Models.
● Items C77A, C77B, C77C, C77D, R80A, R80B, R80C, R80D are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	MATTISON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	10KΩ	½	EP-107A	QJ-40 *	RTV-1	5BBT-504-B		Contrast-Panel
B	1MEG	½						Volume & Sw.-Tapped ③ 250KΩ-Rear
R2A	1MEG	½	EP-105	QJ-161 **	RTV-65	SBB-505	UF16L ⟩ † UR64L ⟩	Vert.Hold-Panel
B	50KΩ	½						Horiz.Hold-Rear
R3A	5000Ω	4						Focus-wirewound-panel
B	50KΩ	½						Brightness & Phono Sw.-Rear
R4	20Ω	2	970111-16	W-20	RTV-98	5VT-901	R20CT	Horiz. Centering-tapped ④ 10Ω, wire wound
R5	20Ω	2	970111-16	W-20K10	RTV-98	5VT-901	R20CT	Vert.Centering-tapped ⑤ 10Ω, wire wound

CONTROLS (cont)

ITEM No	RATING RESISTANCE	RATING WATTS	MATTISON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No	INSTALLATION NOTES
R6A	5000Ω	2	EP-111	WK-5000	A43-5000	VK-135	R5000L	Vert.Linearity-wire wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R6A
R7A	2.5MEG	½	EP-101	Not Req.	AG-94-8	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-116 & P1-121 (Panel), B13-137X & R1-205 (Rear) & SWITCH 76-1.
** CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B11-137 &P1-121 (Panel) B11-123 & R1-205 (Rear)
† UNIVERSAL REPLACEMENT (Mallory exact duplicate part #UR16G1).

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	MATTISON PART No.	IRC PART No.	NOTES
R8	4700Ω	½		BTS-4700	
R9	4700Ω	½		BTS-4700	
R10	47Ω	½		BTS-47	
R11	470Ω	½		BTS-470	
R12	470Ω	½		BTS-470	
R13	47Ω	½		BTS-47	
R14	15KΩ	½		BTS-15K	
R15	47KΩ	½			
R16	100KΩ	½			
R17	160KΩ 5%	½		BTS-160K 5%	
R18	100KΩ 5%	½		BTS-100K 5%	
R19	150ΩΩ	½		BTS-150Ω	
R20	10KΩ	½		BTS-10K	
R21	220KΩ	½			
R22	10KΩ	½		BTS-10K	
R23	15KΩ	½			
R24	3.3MEG	1		BTA-3.3MEG	Note 1
R25	3.3MEG	1		BTA-3.3MEG	Note 1
R26	150Ω	½		BTS-150	
R27	220KΩ	½		BTS-220K	
R28	82Ω	½		BTS-82	
R29	1000Ω	½		BTS-1000	
R30	100KΩ	½		BTS-100K	
R31	56KΩ	1		BTA-56K	
R32	150Ω	½		BTS-150	
R33	5800Ω 5%	½			
R34	82Ω	½		BTS-82	Note 2
R35	1000Ω	½		BTS-1000	
R36	150Ω	½		BTS-150	
R37	3300Ω	½		BTS-3300	
R38	39Ω	½		BTS-39	
R39	2700Ω 5%	½		BTS-2700 5%	
R40	1000Ω	½		BTS-1000	
R41	150Ω	½		BTS-150	
R42	150Ω	½		BTS-150	
R43	56000Ω 5%	½			
R44	1000Ω	½		BTS-1000	
R45	3900Ω 5%	½		BTS-3900 5%	
R46	27KΩ	½		BTS-27K	
R47	10KΩ	½		BTA-10K	
R48	3300Ω	½		BTS-3300	
R49	220KΩ	½		BTS-220KΩ	Note 3
R50	1MEG	½		BTS-1MEG	
R51	330Ω	½		BTS-330	
R52	12KΩ	2		BTS-12K	
R53	3000Ω	10			
R54	10KΩ	½		BTA-10K	
R55	100KΩ	½		BTS-100K	
R56	1MEG	½		BTS-1MEG	
R57	16KΩ	½		BTS-16K	
R58	100Ω	½		BTS-100	
R59	1000Ω	½		BTS-1000	
R60	470KΩ	½			
R61	100Ω	½		BTS-100	
R62	3300Ω	½		BTS-3300	
R63	1000Ω	½		BTS-1000	
R64	22KΩ	½		BTS-22K	
R65	10KΩ	½		BTA-10K	
R66	10KΩ	½		BTS-10K	
R67	22KΩ	½		BTS-22K	
R68	100KΩ	½		BTS-100K	

ITEM No.	RATING OHMS	RATING WATT	MATTISON PART No.	IRC PART No.	NOTES
R69	100KΩ	½		BTS-100K	
R70	82KΩ	½		BTS-82K	
R71	10MEG	½		BTS-10MEG	
R72	330KΩ	½		BTS-330K	
R73	270KΩ	½		BTS-270K	
R74	1000Ω	5		1 3/4A-1000	
R75	2.2MEG	½		BTS-2.2MEG	
R76	47KΩ	½		BTS-47K	
R77	2.2MEG	½		BTS-2.2MEG	
R78	270KΩ	½		BTS-270K	
R79	10KΩ	1		BTA-10K	
R80A	22KΩ	½		BTS-22K	
B	22KΩ	½	●	BTS-22K	
C	8200Ω	½		BTS-8200	
D	8200Ω	½		BTS-8200	
R81	1.5MEG 5%	½		BTS-1.5MEG 5%	
R82	220KΩ	½		BTS-220	
R83	100KΩ	½		BTS-100K	
R84	3.2MEG	½		BTS-3.2MEG	
R85	8200Ω	½		BTS-8200	
R86	2.2MEG	½		BTS-2.2MEG	
R87	1800Ω	½		BTS-1800	
R88	1000Ω	1		BTA-1000	
R89	560Ω	½		BTS-560	
R90	2300Ω	½		BTS-2300	
R91	580Ω	½		BTS-580	
R92	560Ω	½		BTS-560	
R93	560Ω	½		BTS-560	
R94	10Ω	½		BTS-10	
R95	39KΩ	1		BTA-39K	
R96	47KΩ	1		BTA-47K	
R97	39KΩ	1		BTA-39K	
R98	27KΩ	1		BTA-27K	
R99	22KΩ	½		BTS-22K	
R100	470KΩ	½		BTS-470 K	
R101	470KΩ	½		BTS-470K	
R102	470KΩ	½		BTS-470K	
R103	27KΩ	½		BTS-27K	
R104	10KΩ	1		BTA-10K	
R105	5000Ω	10		1 3/4A-5000	
R106	6800Ω	½		BTS-6800	
R107	220 KΩ	½		BTS-220K	
R108	270KΩ	½		BTS-270K	
R109	22KΩ	½		BTS-22K	
R110	470KΩ	½		BTS-470K	
R111	100Ω	½			
R112	250Ω	2			Note 4
R113	250Ω	2			Note 4
R114	5000Ω	10		1 3/4A-5000	Note 5
R115	220KΩ	1		BTA-220K	
R116	15KΩ	10		1 3/4A-15K	
R117	4000Ω	10		1 3/4A-4000	
R118	3.3Ω	½			
R119	1Ω	1			
R120	80Ω	10		1 3/4A-80	Note 6
R121	600Ω	10		1 3/4A-600	
R122	3000Ω	10		1 3/4A-3000	
R123A	1260Ω	25			
B	330Ω				
R124	1000Ω	½		BTS-1000	Note 3

Note 1. Some Models may use a single 6.8MEG resistor in this application.
Note 2. Some Models may use a 62Ω resistor in this application.
Note 3. Not used in all Models.
Note 4. Some Models may use a single 100Ω resistor in this application.
Note 5. Some Models may use a 15KΩ resistor in this application.
Note 6. Some Models may use a 93Ω resistor in this application.
● Items R80A, R80B, R80C, R80D, C77A, C77B, C77C, C77D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	MATTISON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ⑥2.74A	720VCT ⑥.300ADC	5VAC ⑥6A	6.3VAC ⑥1.2A SEC. 4 6.3VAC ⑥10A	ET-101B	P-8166 ① ②	P-3053 ② ④		R-37BC	
T2	117VAC ⑥.1A	117VAC .018ADC tap ⑥ 6.3VAC ⑥.64A			T-393	PS-8416 ① ③				

① Use ½ of HV winding
② Drill one new mounting hole.
③ Parallel the two 6.3V, 5A windings and use as sec.4.
④ Parallel 5V windings.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	MATTISON PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	RCA TYPE No.	NOTES
T3	170Ω	950Ω	ET-102	A-8121	A-4000	TBC-1	A-97K	208T2	Vert.Osc.Trans.
T4	365Ω tap ⑥60Ω	10Ω tap ⑥ 7Ω		A-8136 ① ④	HVO-10 ⑤	TPB-8 ⑥	D-25 ⑤		Horiz.Output Trans.
		SEC. 2 2Ω							
		SEC. 3 0Ω							
T5	570Ω	8Ω	ET-103	A-8112 ⑥	A-3036 ⑥	TSO-10	A-107X	204T2 ①	Vert.Output Trans.
T6A	13Ω		EL-138A	DY-8A ⑦	MDF-70	TY-5	Y-21 ⑥	206D1 ⑥	Horiz.Deflection Coils
B	58Ω						B-1000		Vert. Deflection Coils
T7	900Ω		EL-114C						Focus Coil
T8	8.7Ω tap ⑥3.3Ω			MWC-5				202H5	Horiz.Lin.Coil
T9	10Ω			MWC-6	TL-3 ⑥	WC-12 ⑥ ⑩	211R1		Width Coil

① Drill new mounting holes.
② Connect original terminal #1 to new terminal #1, original #6 to new #9, original #7 to new #5, original #8 to new #4, original #5 to new #7, original #4 to new #6.
③ Connect original terminal #1 to new terminal #1, original #8 to new #4, original #7 to new #5, original #5 to new #6, original #4 to new #7, original #6 to new #9.
④ Connect original terminal #1 to new terminal #1, original #5 to new #5, original #6 to new #6, original #4 to new #9, original #7 to new #4, original #8 to new #7.
⑤ Connect original terminal #3 to new terminal #2, original #2 to new #7, original #1 to new #8, original #6 to new "T", original #7 to new #3, original #5 to new #4, original #4 to new #2, original #6 to new #6.
⑥ Drill one new mounting hole.
⑦ Use original horizontal deflection coil network if necessary.
⑧ Use original deflection coil network.
⑨ Do not use tap.
⑩ Connect to coded blue and green terminals.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	MATTISON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T10	6.5KΩ	3.4Ω	305Ω	.4Ω	ET-105	A-3078	A-2931	RO-13	S-7X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	MATTISON PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	12"	PM	3.4Ω	ESP-108	12J11	12A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	MATTISON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Booster Ant. Coil	0Ω (Tapped)		H-315B			4606	Low Band-Channels 2-6
L2	Booster RF Coil	0Ω (Tapped)		H-316A			4604	Low Band-Channels 2-6
L3	Booster Ant. Coil	0Ω (Tapped)		H-315B			4606	High Band -Channels 7-13
L4	Booster RF Coil	0Ω (Tapped)		H-315A			4604	High Band-Channel 7-13
L5	Ant. Coils	0Ω CT	0Ω					
L6	Fil.Choke	0Ω						
L7	Neutr.Coil	0Ω						
L8	RF,Mixer Grid & Osc. Coil	0Ω						
L9	Fil.Choke	0Ω						
L10	RF Choke	0Ω						
L11	1st.Video IF	.8Ω						
L12	RF Choke	1.2Ω						
L13	RF Choke	2.2Ω			19-3036	TV-180	4636	27 Microhenries
L14	Fil.Choke	0Ω					4604	1.8 Microhenries
L15	2nd.Video IF & Sound Take-off	.2Ω	0Ω CT (Tapped)				6185	
L16	Fil.Choke	0Ω					4604	1.8 Microhenries
L17	3rd.Video IF	.3Ω			17-1002	TV-101	6187	Includes Trap
L18	Fil.Choke	0Ω					4604	1.8 Microhenries
L19	4th.Video IF	.4Ω					6345	Includes Trap
L20	Fil.Choke	0Ω					4604	1.8 Microhenries
L21	5th.Video IF	.4Ω					6346	Includes Trap
L22	Fil.Choke	0Ω					4604	1.8 Microhenries
L23	Series Peaking Coil	5Ω			19-3125 *	TV-182	6178	120 Microhenries, wound on 22KΩ resistor
L24	Shunt Peaking	8Ω			19-3250	TV-185	6181	250 Microhenries
L25	4.5MC Trap	.4Ω			20-1004	TV-151	1470	
L26	Series Peaking Coil	5Ω			19-3125 *	TV-182	6178	120 Microhenries, wound on 22KΩ resistor
L27	Shunt Peaking Coil	4.4Ω			19-3093	TV-181	6177	93 microhenries
L28	Series Peaking Coil	5Ω			19-3125 *	TV-182	6178	120 Microhenries, wound on 22KΩ resistor

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MATTISON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L29	Shunt Peaking Coil	4.4Ω			19-3093	TV-181	6177	93 Microhenries
L30	1st. Sound IF	.1Ω	.1Ω		17-1011	TV-104	6190	
L31	2nd. Sound IF	.1Ω	.1Ω		17-1012	TV-105	6191	
L32	Sound Discriminator	.1Ω	.1Ω CT		17-1013	TV-106	6192	
L33	Horiz. Osc.	48Ω	50ΩCT		20-1400	TV-160	6194	Pri. Tapped @ 12Ω
L34	RF Choke	3Ω			19-3036	TV-180	4628	35 Microhenries, not used in all Models

* Parallel with 22KΩ resistor.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: MATTISON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L35	.300ADC	66Ω	2.1 Hy.	EL-113	C-2326		TR-1733 ①	C-17X ①

① Drill one new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: MATTISON PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.018ADC			8Y1 ①		8S35 ①	35

① Drill new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: MATTISON PART No. FUSE	MATTISON PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG (Slo-Blo) P/T	15/100 A. 250 V.			315.150 (3AG 15/100 A. Slo-Blo P/T)		MDV 15/100	

MISCELLANEOUS

ITEM No.	PART NAME	MATTISON PART No.	NOTES
M3	R F Booster		Model 630-6AB
M4	R F Tuner		
M5	Switch		High-Low Channel Selector (Booster)
M6	Switch		Thermal, Booster Off/On (By passed in this application).
M7	Ion Trap		
B3	Trimmer		Horizontal Drive (20-270 MMF)

TROUBLE SHOOTING AIDS (cont)

AUDIO

WEAK OR NO SOUND

Check, by substitution V5, V14, V15, V16, V17, V18 and V19. Check stages of V18 and V19 by applying audio signal to control grid of V18 (pin #1).

If Satisfactory	If Unsatisfactory
Check components associated with V18 and V19 especially C71, C72, C73, T10 and speaker.	Check audio IF alignment and components especially all bypass capacitors.

BUZZ

Adjust discriminator secondary A15 for minimum buzz. If buzz is still objectionable, substitute V17 and readjust A14 and A15 as outlined in the alignment section.

DISTORTED

Check, by substitution, V5, V14, V15, V16, V17, V18 and V19. Check stages of V18 and V19 using audio signal generator and scope. Apply audio signal between pin #1 of V18 and ground, connect scope across secondary of T10.

If Satisfactory	If Unsatisfactory
Check audio IF and discriminator alignment and components.	Check components associated with V18 and V19.

POWER

SMALL AND/OR DIM RASTER

Substitute V30 and V31. Check B+ filter and decoupling network and components especially all filter capacitors.

DEAD SET

Check AC interlock assembly. Check switch on volume control. Check T1.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M2. Check by substitution V22, V26, V27, V28 and V29. Check waveform at W17.

If Satisfactory	If Unsatisfactory
Check C98, C100, C101, C102, C103, T4, T6A, R118 and other associated components.	Check C96, C97, R108, R109, R110 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check, by substitution, V22, V26, V27, V8, V29, V30 and V31. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check, by substitution, V22, V27, V28 and V29. Check R118, C103, T4, T6A and other associated components. Check picture tube.

GENERAL

RASTER SOUND NO PICTURE

Check, by substitution, V6, V7, V8, V9, V10 and V11. Check picture tube and other associated circuit components especially those associated with V10 and V11.

RASTER NO PICTURE NO SOUND

Check by substitution V3, V4 and V5. If booster is used, check V1 and V2. Check components associated with these stages.

TOTAL LOSS OF SYNC

Check by substitution V20, V21 and V22. Check associated circuit components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustment s are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

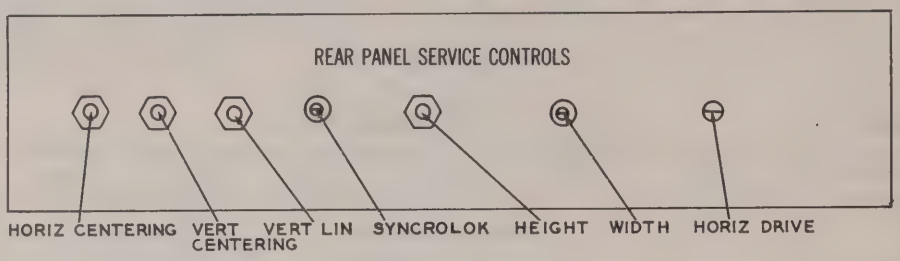
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions)

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L33) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the discriminator secondary (L32) located on bottom of chassis. (See tube placement chart).

FUSES

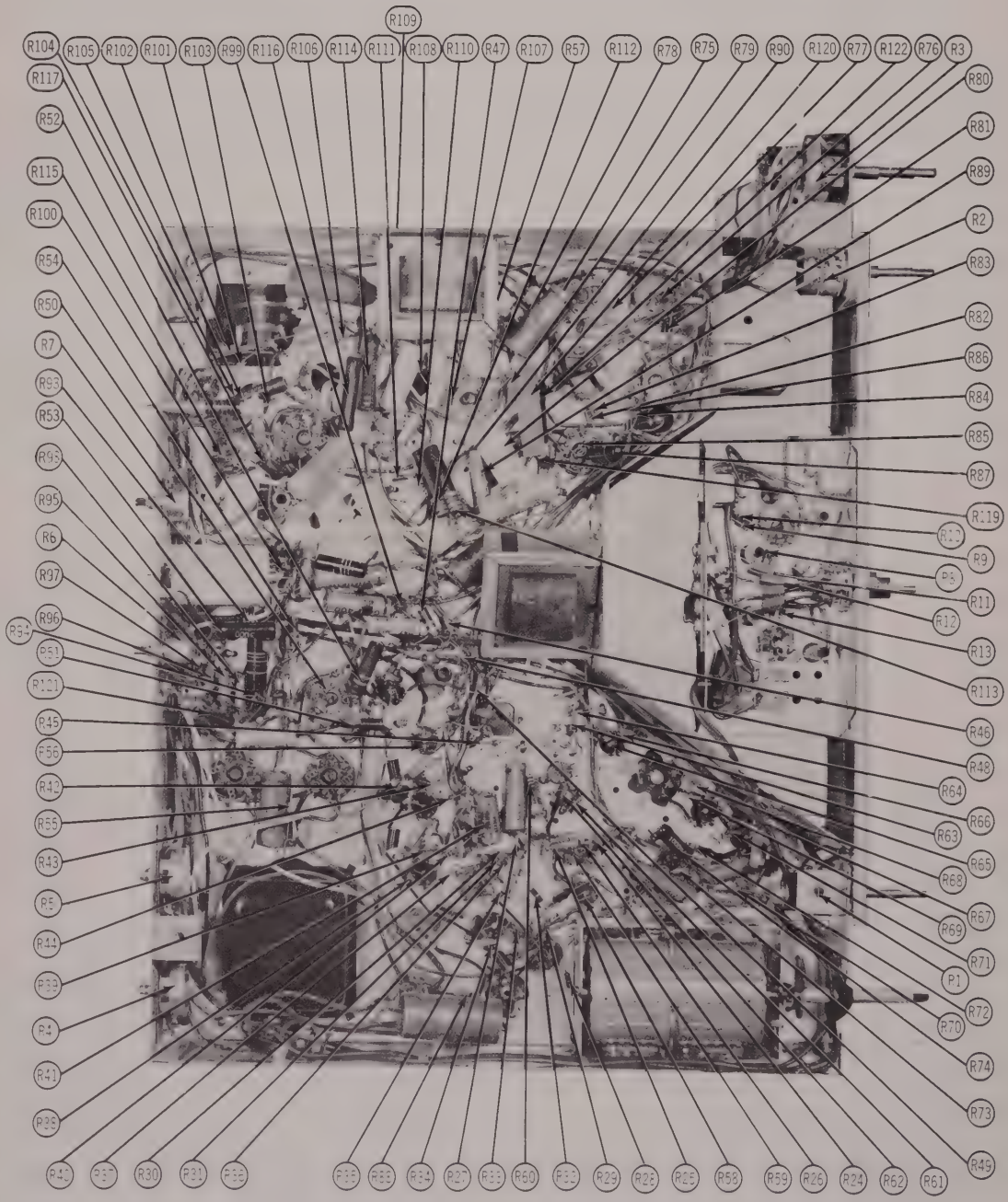
One fuse is used for Horizontal Sweep Circuit protection. (For location, see tube placement chart).

CENTERING

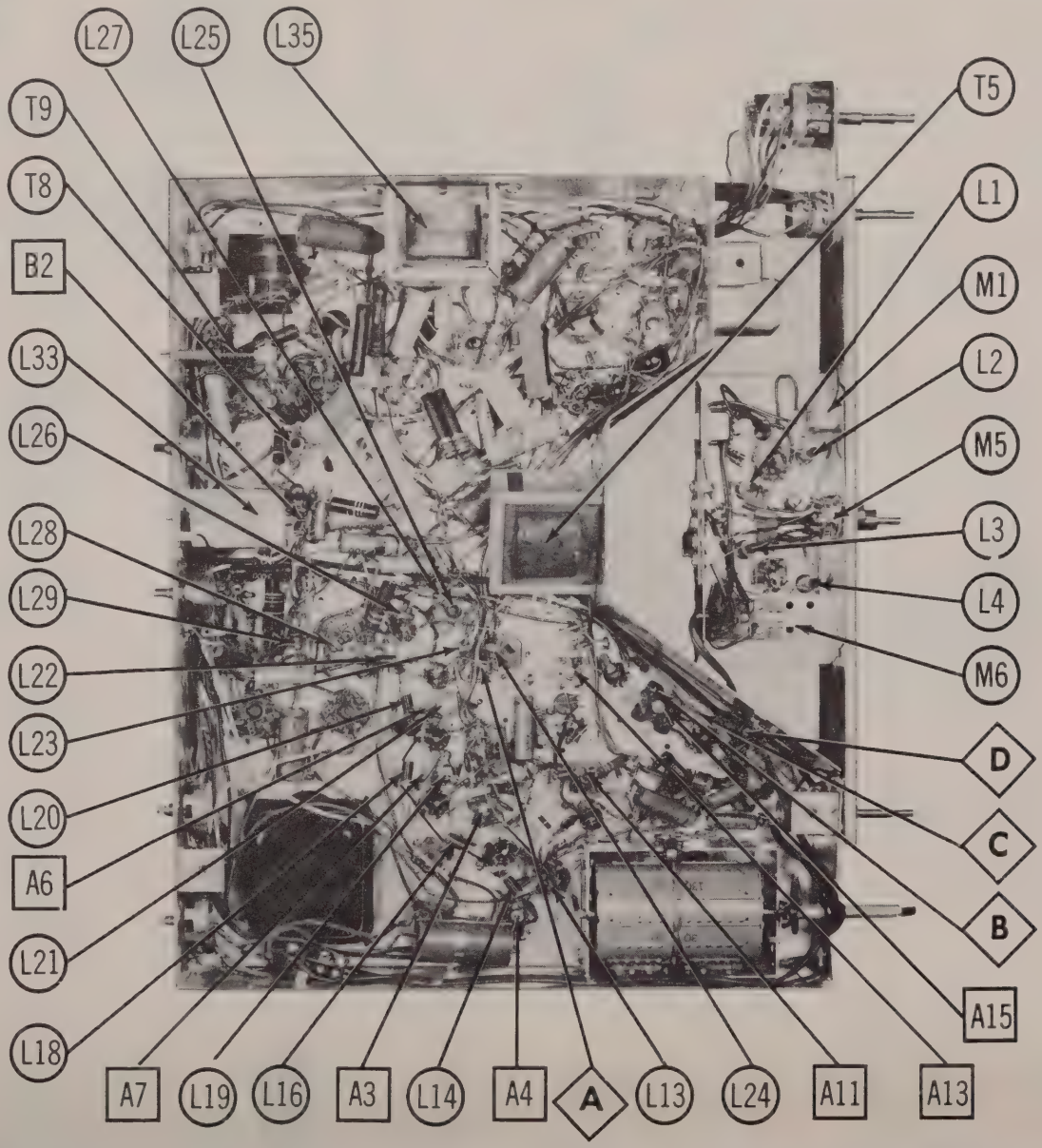
Centering is accomplished electrically. Adjust the vertical and horizontal centering controls until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 9 push on type control knobs from front panel.
2. Remove 4 wood screws. Remove rear cover.
3. Disconnect speaker plug, yoke plug, focus plug and HV lead.
4. Remove 4 chassis bolts. Remove chassis.
5. Remove 4 wood screws. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

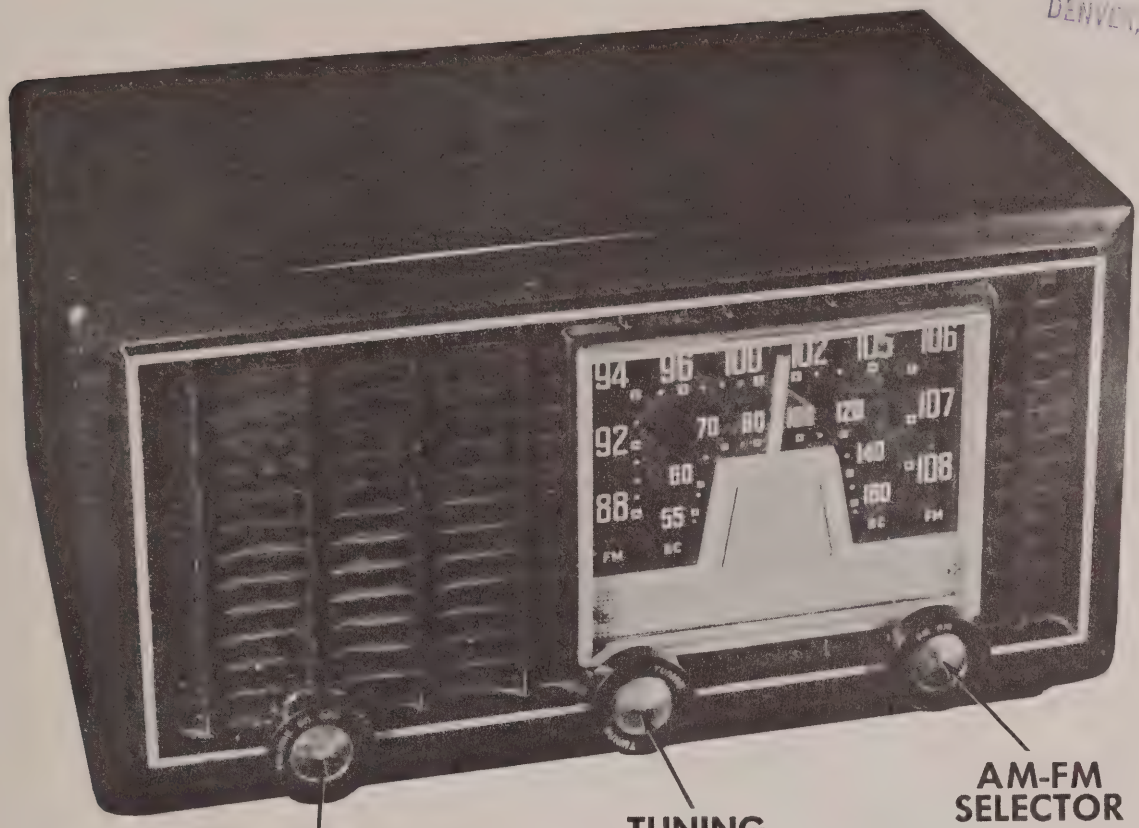


CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PHILCO
MODELS B-956, 53-956

PROPERTY OF
L. F. [illegible]
[illegible] SHIP
3[illegible] ST.
DENVER, COLORADO

PHILCO
MODELS B-956, 53-956



VOLUME CONTROL
ON-OFF SWITCH

TUNING

AM-FM
SELECTOR

PHILCO
MODELS B-956, 53-956

TRADE NAME	Philco Models B-956, 53-956		
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.		
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver		
TUBES (Six)	Types 12AU6 RF Amp., 12AT7 Conv., 12BA6 1st. IF Amp., 12AU6 2nd. IF Amp., 19V8 Det.-AVC-AF Amp., 35C5 Audio Output		
POWER SUPPLY	110-120 Volts AC-DC	RATING	.32 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540-1620KC	FREQ. MOD.	88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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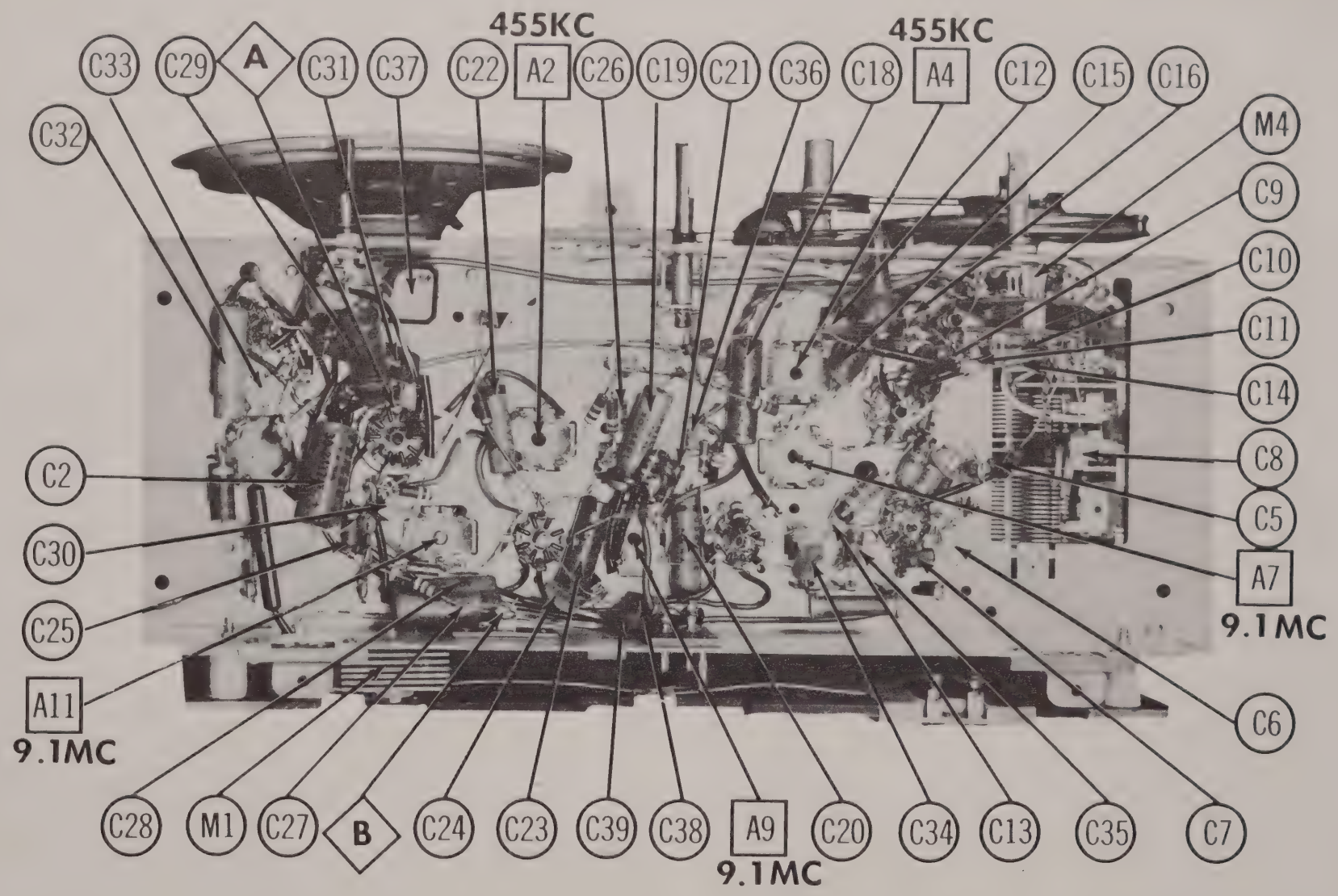
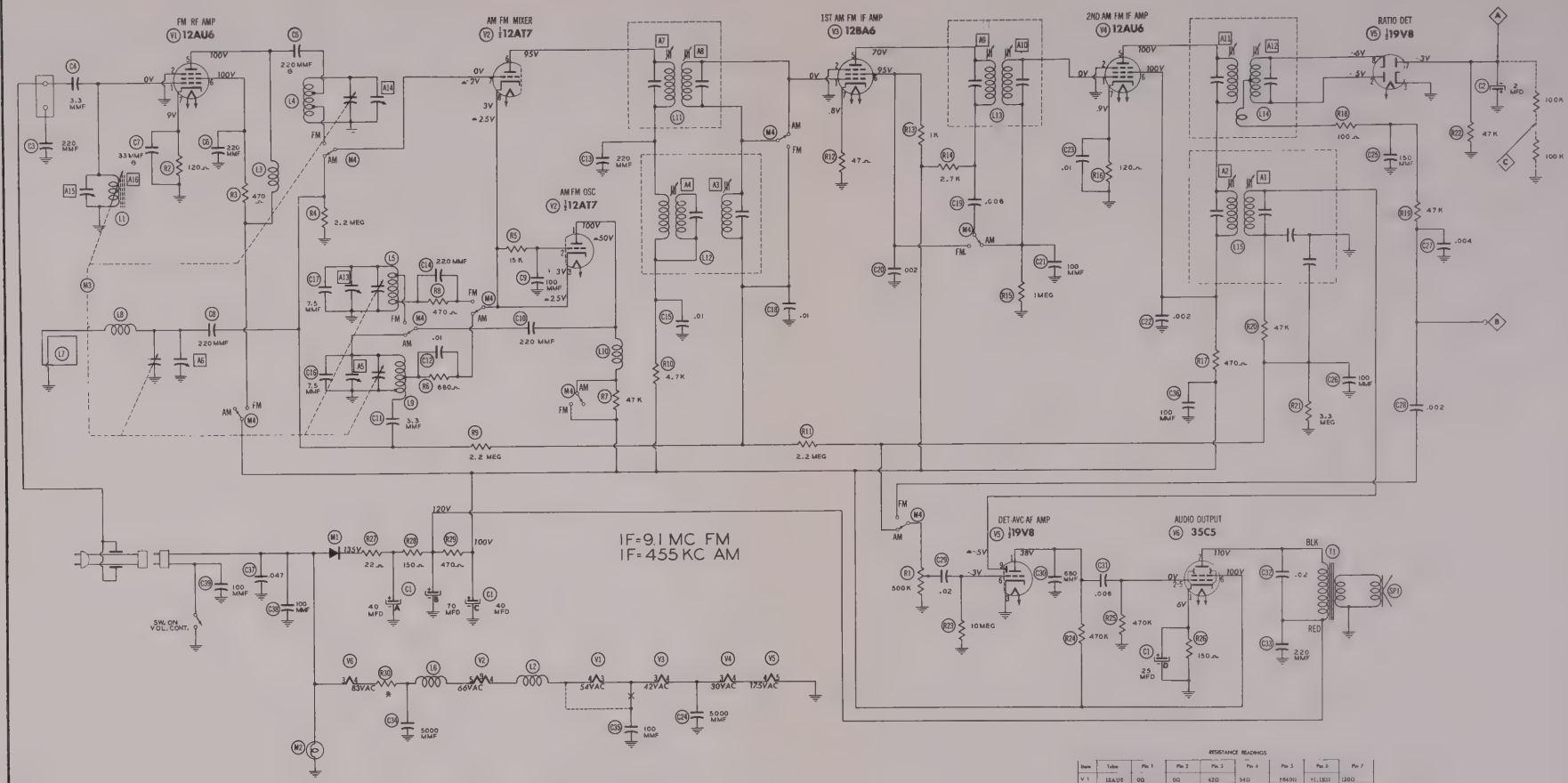


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AU6	0Ω	420	54Ω	†640Ω	†1.1KΩ	120Ω	
V 2	12AT7	† 640Ω †† 68KΩ * 1.5Meg	15.5KΩ 69.1KΩ	470Ω 68KΩ	54Ω	96Ω	15.3KΩ	0Ω 81.5Meg
V 3	12BA6	81.5Meg	0Ω	42Ω	30Ω	†8.3KΩ	†1.6KΩ	41Ω
V 4	12AU6	1Meg	0Ω	30Ω	18Ω	†1.1KΩ	†1.1KΩ	120Ω
V 5	19V8	†470KΩ	INF	0Ω	18Ω	0Ω	10Meg	47KΩ
V 6	35C5	150Ω	470KΩ	81Ω	780Ω	INF	†640Ω	†370Ω

RESISTANCE READINGS

NOTE. FILAMENT RESISTANCE MEASUREMENTS TAKEN WITH M2 REMOVED
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE SPECIFIED
MEASURED IN "AM" POSITION
† MEASURED FROM OUTPUT OF M2
* MEASURED IN AM POSITION
* 100Ω HOT, 880Ω COLD

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- 8 socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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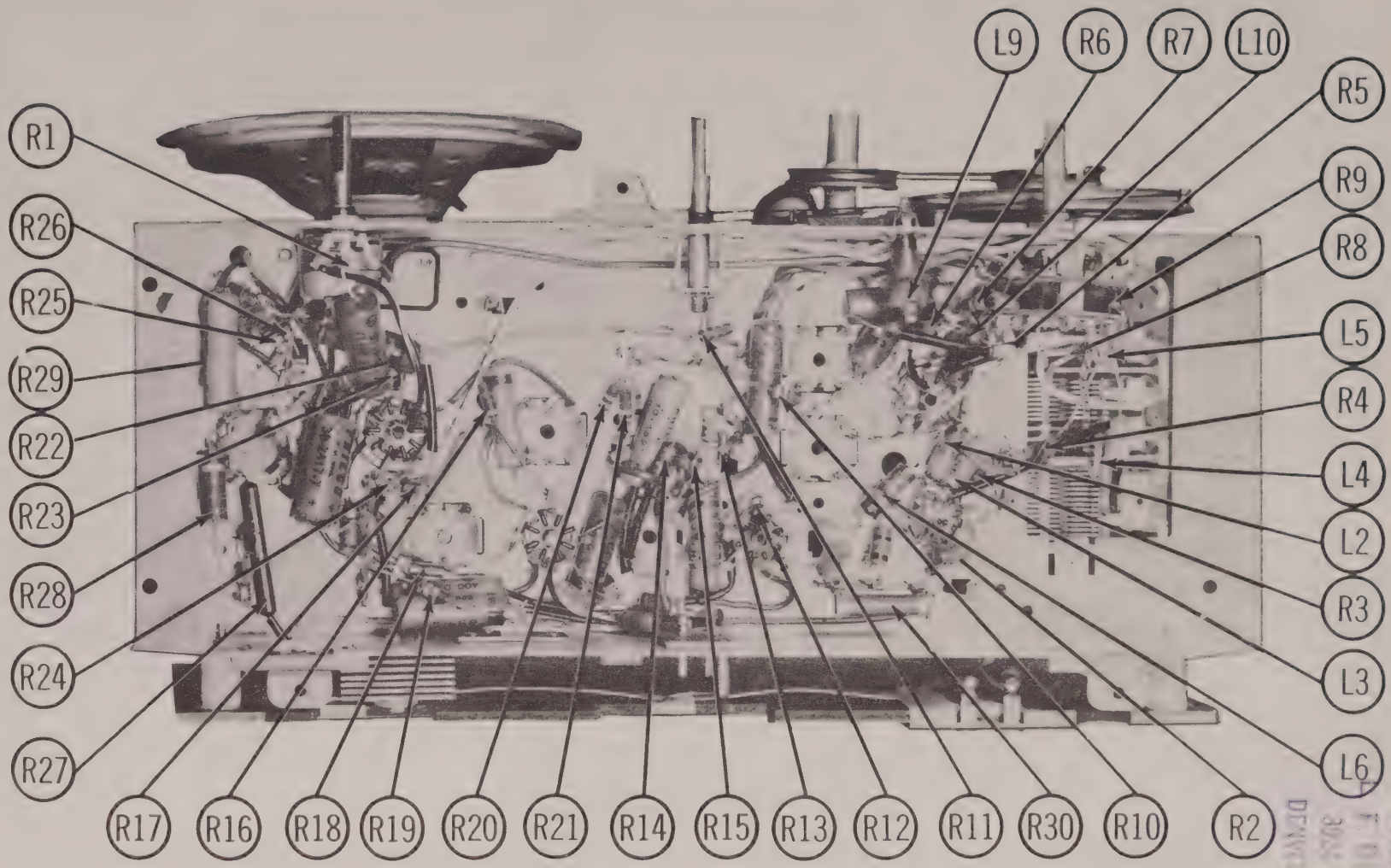


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
DENNIS CHAMMAS

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to coincide with last index mark at low frequency end of dial.

AM ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to loop terminal on antenna terminal strip. Low side to chassis.	455KC (400∿Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust in order given for maximum output.
2.		Loop	1620KC	"	1620KC	"	A5	Adjust for maximum output.
3.		"	1500KC	"	1500KC	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to stator lug, FM RF section of tuning gang. Low side to chassis.	9.1MC	FM	88MC	DC probe to point Ⓐ. Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection. Attenuate generator to maintain approximately 5 volts at VTVM.
5.	"	"	"	"	"	DC probe to point B. Common to point Ⓒ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to stator lug, FM RF section of tuning gang. Low side to chassis.	9.1MC (450KC Swp)	FM	88MC	Vert. Amp. to point Ⓐ. Low side to chassis.	A7, A8 A9, A10 A11	Disconnect stabilizer capacitor C2. Adjust for curve of maximum amplitude and symmetry as in Fig. 1.
5.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Common to chassis.	A12	Reconnect capacitor C2. Adjust so that 9.1MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A-11 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	270Ω Carbon Resistor	Across FM antenna terminals with 270Ω in series with high lead.	108.5MC (Unmod.)	FM	108.5MC	DC probe to point Ⓐ. Common to chassis.	A13	Adjust for maximum deflection.
7.	"	"	88MC	"	88MC	"	L5	Compress or expand L5 for maximum deflection.
8.	"	"	105MC	"	105MC	"	A14	Adjust for maximum deflection while rocking tuning gang.
9.	"	"	"	"	"	"	A15	Adjust for maximum deflection.
10.	"	"	92MC	"	92MC	"	L4	Compress or expand L4 for maximum deflection. Readjust A14 as in Step 8 and repeat steps 7 thru 10 until no further improvement is noted.
	If FM antenna coil, L1, is replace it should be adjusted as in Step 11.							
11.	270Ω Carbon Resistor	Across antenna terminals with 270Ω in series with high lead.	92MC	FM	92MC	DC probe to point Ⓐ. Common to chassis.	A16	Adjust for maximum deflection.

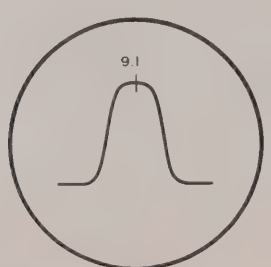


FIG. 1

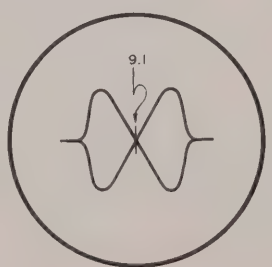


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12AU6	12AU6	7BK	
V2	Converter	12AT7	12AT7	9A	
V3	1st. FM AM IF Amp	12BA6	12BA6	7BK	
V4	2nd. FM AM IF Amp	12AU6	12AU6	7BK	
V5	FM Detector-AM Det.-AVC-AF Amp	19V8	19V8	9E	
V6	Audio Output	35C5	35C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

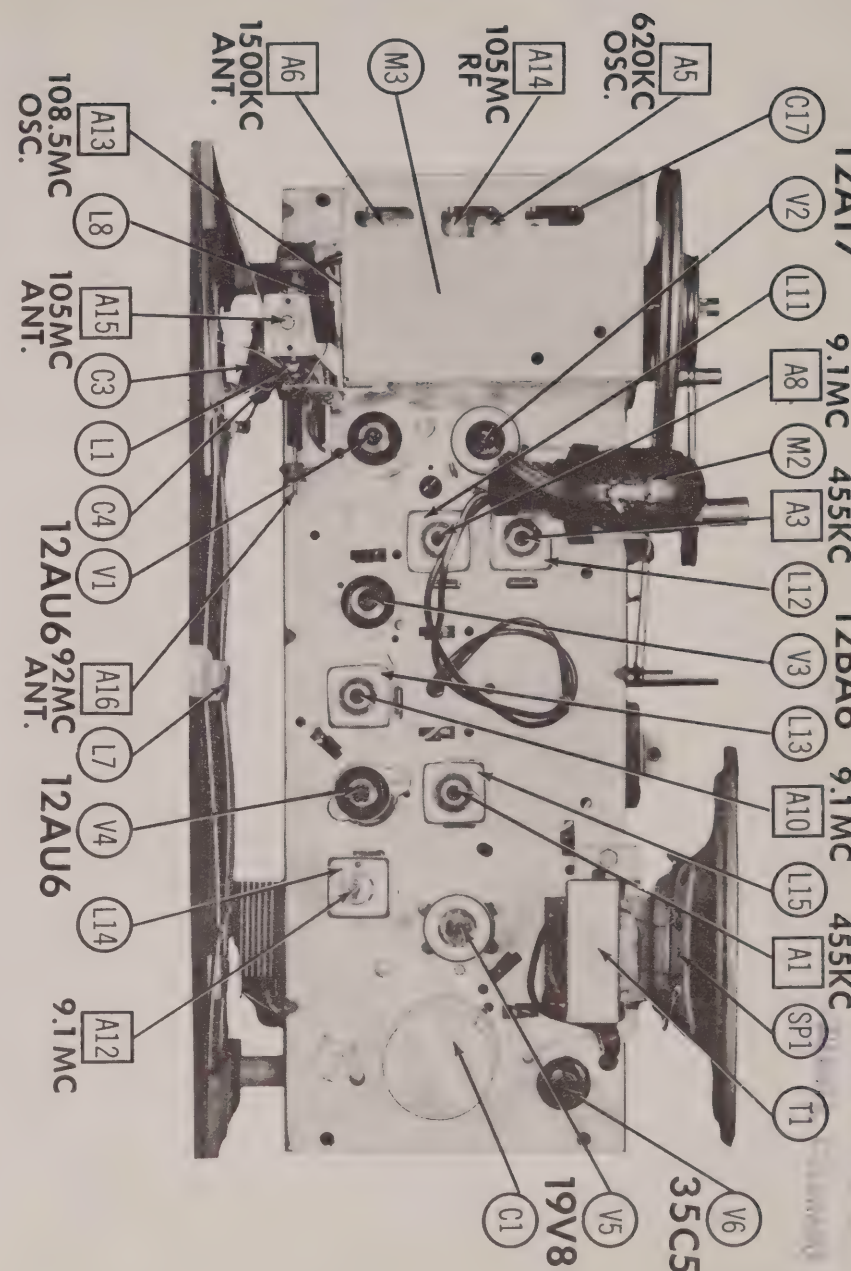
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150	30-4650-46	AFH4-37		DO32		FP411.3	R1167	
B	70	150								
C	40	150								
D	25	25								
C2	2	50	302417-7	E26E6		BBR-2-50T		TC302	TVA-1301	
C3	220		3012-21	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C4	3.3		62-122001001	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C5	220		30-6002	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	Note 1
C6	220		62-122001021	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C7	33		62-033009001	SI33	D6-330		GP1K-330	UC-5433	5GA-Q33	Note 2
C8	220		62-122001021	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C9	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C10	220		62-122001021	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C11	3.3		30-1224-49	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C12	.01	400	30-4650-58	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C13	220		62-122001021	SI220	D6-221		GP2K-221	DC-5322	5GA-T22	
C14	220		♦30-6002	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C15	.01	400	36-4650-58	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C16	7.5		30-1224-65							
C17	7.5		30-1224-8							
C18	.01	400	30-4650-58	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C19	.006	400	30-4650-57	P688-006		PTE6D6	GP2-333-602	PT621	6TM-D6	
C20	.002	400	30-5650-54	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C21	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C22	.002	400	30-4650-54	P688-002	D6-202	PTE6D2	GP2-333-202	PT6222	6TM-D2	
C23	.01	400	30-4650-58	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C24	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C25	150		62-115001011	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C26	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C27	.004	400	30-4650-56	P688-004	D6-402	PTE6D4	GP2-333-402	PT624	6TM-D4	
C28	.002	400	30-4650-57	P688-002	D6-202	PTE6D2	GP2-333-202	PT6222	6TM-D2	
C29	.02	400	30-4650-60	P488-02	DD-203	PTE4S2		PT412	4TM-S2	
C30	680		62-168001021	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C31	.006	600	30-4650-60	P688-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C32	.02	400	30-4650-60	P488-02	DD-203	PTE4S2		PT412	4TM-S2	
C33	220		62-122001001	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C34	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C36	100		62-110009001	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C37	.047	400	30-4667-45	489ZX-05		PJ4S47		PT4147	4TM-S47	
C38	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C39	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	

Note 1. Model B-956 uses 470MMF in this application (part #62-147001021).
Note 2. Some Models use 22MMF in this application (part #62-022009001).
♦ Items C14 and R8 are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	33-5566-20	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	120Ω	½	66-1128340	BTS-120	
R3	470Ω	½	66-1478340	BTS-470	
R4	2.2Meg	½	66-5228340	BTS-2.2Meg	
R5	15KΩ	½	66-3158340	BTS-15K	
R6	680Ω	½	66-1688340	BTS-680	
R7	47KΩ	½	66-3478340	BTS-47K	
R8	470Ω	½	♦30-6002	BTS-470	
R9	2.2Meg	½	66-5228340	BTS-2.2Meg	
R10	4700Ω	½	66-2478340	BTS-4700	
R11	2.2Meg	½	66-5228340	BTS-2.2Meg	
R12	47Ω	½	66-0478340	BTS-47	
R13	1000Ω	½	66-2108340	BTS-1000	
R14	2700Ω	½	66-2278340	BTS-2700	
R15	1Meg	½	66-5108340	BTS-1Meg	
R16	120Ω	½	66-1128340	BTS-120	
R17	470Ω	½	66-1478340	BTS-470	
R18	100Ω	½	66-1108340	BTS-100	
R19	47KΩ	½	66-3478340	BTS-47K	
R20	47KΩ	½	66-3478340	BTS-47K	
R21	3.3Meg	½	66-5338340	BTS-3.3Meg	
R22	47KΩ	½	66-3478340	BTS-47K	
R23	10Meg	½	66-6108340	BTS-10Meg	
R24	470KΩ	½	66-4478340	BTS-470K	
R25	470KΩ	½	66-4478340	BTS-470K	
R26	150Ω	½	66-1158340	BTS-150	
R27	22Ω	2	66-0225360		
R28	150Ω	2	66-1155360		
R29	470Ω	1	66-1474340	BTA-470	
R30	*	*	33-1343-3		

* Special resistor- 100Ω hot, 880Ω cold

♦ Items R8 and C14 are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.5KΩ	3.1Ω	200Ω	.78Ω	36-1625-21	A-3876①	A-2928 ①	RO-302 ①	S-1X ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5"	PM	3.1Ω	36-1625-21	ST-107 Mod. P5-V	5A1	① Alternate 4" PM Speaker
				36-1625-14 ①	ST-113 Mod. P4-X	4A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω		32-4532A				Includes rubber grommet mounting
L2	Fil. Choke	1.8Ω		32-4422-8			4606	2.2 Microhenries, (IRC part #CLA)
L3	FM RF Choke	3Ω		32-4422-10			4608	3.3 Microhenries, (IRC part #CLA)
L4	FM RF Coil	0Ω		32-4415-2				Tapped
L5	FM Osc. Coil	0Ω		32-4414-5				Tapped
L6	Fil. Choke	1.8Ω		32-4422-8			4606	2.2 Microhenries, (IRC part #CLA)
L7	AM Loop Ant.	2.9Ω		76-7836				Includes support assy.
L8	AM Ant. Loading Coil	.4Ω		32-4061-3			4608	4.1 Microhenries
L9	AM Osc. Coil	9.5Ω		32-4569-1				Tapped @ 3.7Ω and 2.9Ω
L10	RF Choke	3Ω		32-4422-10			4608	3.3 Microhenries (IRC part #CLA)
L11	1st. FM IF	1.4Ω	1.4Ω	32-4518A				
L12	1st. AM IF	8Ω	17Ω	32-4516A				Tertiary winding-13Ω
L13	2nd. FM IF	2.2Ω	2.2Ω	32-4518-1A				
L14	Ratio Det.	3.2Ω	.5ΩCT	32-4310-4A				Tertiary winding-.65Ω
L15	2nd. AM IF	17Ω	18Ω	32-4517A	16-6770	BC-355	12-C6	

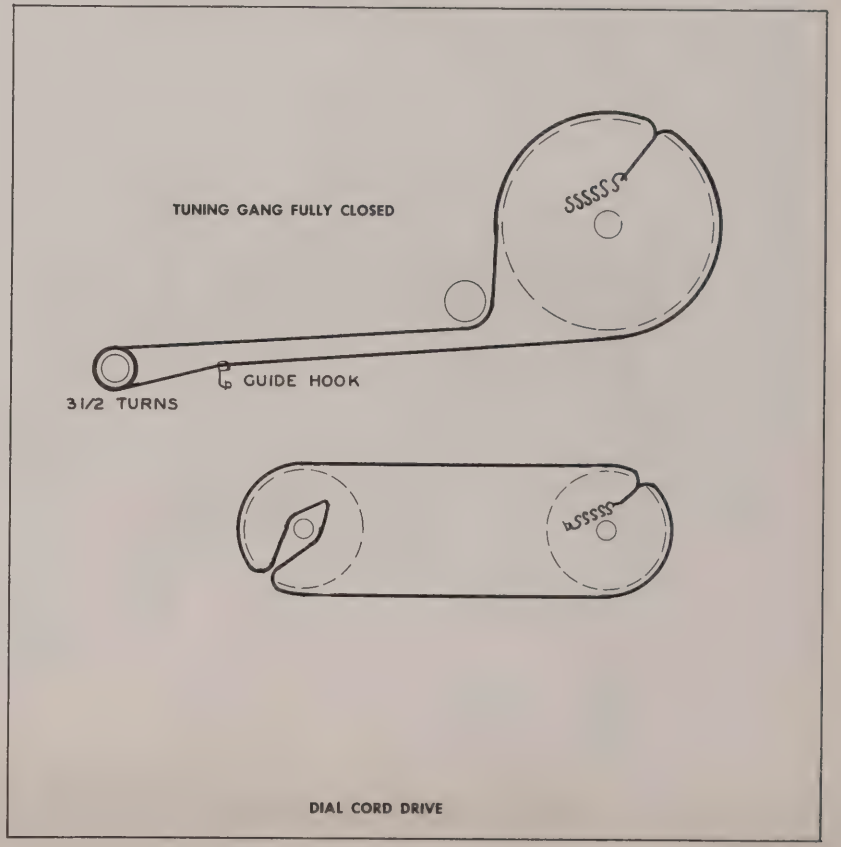
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA PHILCO PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.064ADC	34-8003-1	NC5	5M1	1004A	6S100	100

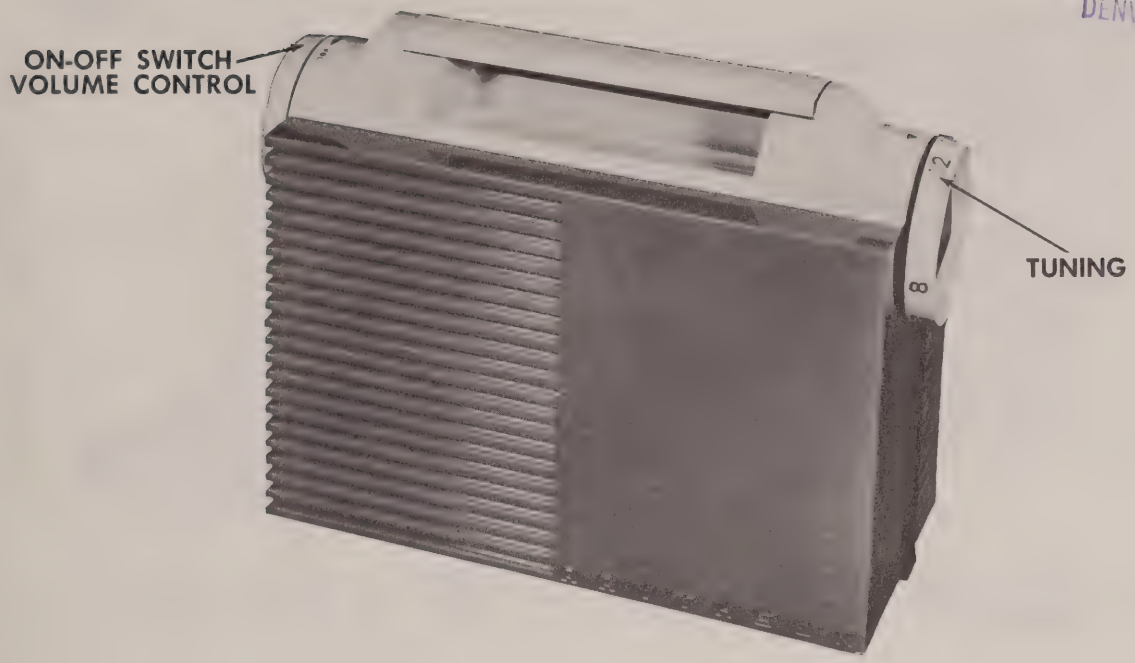
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Pilot Lamp	34-2605	117V., 7W (Frosted)
M3	Tuning Cap.	31-2762-1	31-477MMF, 7-135MMF (Includes FM Mixer & Osc. Tuning Capacitor)
M4	Switch	42-1924-1	AM-FM Selector
A13	Trimmer Cap.	31-6511-10	FM Oscillator
A15	Trimmer Cap.	45-3034	FM Antenna
	Cabinet	10941	
	Back Assembly	76-7829	
	Scale	54-4987	
	Pointer	56-9906	
	Knob	54-4774-28	AM-FM Selector
	Knob	54-4774-26	Tuning
	Knob	54-4774-27	Off/On/Volume



DIAL CORD DRIVE

RAYTHEON
MODELS PR-51, A (Ch. 4P12, A)



RAYTHEON
MODELS PR-51, A (Ch. 4P12, A)

TRADE NAME	Raytheon Models PR51, PR51A
MANUFACTURER	Raytheon Mfg. Co., TV & Radio Div., 5921 Dickens Ave., Chicago 39, Ill.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	115 Volts AC/DC (or) 7½ Volts "A" Supply & 90 Volts "B" Supply
RATING	.15 Amp. @ 115 Volts AC (or) 52MA @ 7½ Volts DC & 11MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

RAYTHEON MODEL PR51

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		RAYTHEON PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RAYTHEON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	150	8C-16068						R1308	
B	■40	150								
C	▲50	50								
D	200	10								
C2	220		8G-14459	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C3	.05	200	8D-14460	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	.02	200	8D-17268	P488-02	DF-203	PJ2S2		PT412	2TM-S2	
C5	.02	200	8D-17268	P488-02	DF-203	PJ2S2		PT412	2TM-S2	
C6	.25	100	8D-18042	P488-25		PJ2P25		PT4025	2TM-P25	
C7A	100		♦201-15005	SI100	♦PC-50	TM5T1	♦1403-01	GP1K-101	♦100C1	
B	100			SI100		TM5T1		GP1K-101		
C8	5000		8D-17785	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C9A	5000			BPD-005		TM5D5		DC-525		
B	50		†201-19996	SI50	†PC-90	TM5Q5	†1407-01	UC-545	†103C3	
C	2000			BPD-002		TM5D2		DC-522		
C10	.005	200	8G-13962	P688-005	D6-502	PJ6D5	GP2-333-502	PT625	6TM-D5	
C11	.047	400	8J-16081	489ZX-05		PJ4S5		PT4147	4TM-S47	
C12	.09	400	8D-11251							

♦ Items C7A, C7B, R9 are combined in one unit.
† Items C9A, C9B, C9C, R11A, R11B, R11C are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RAYTHEON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	A10A19596	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume-Note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

Note : Some Models may use an alternate control (part #A10A19596-1)

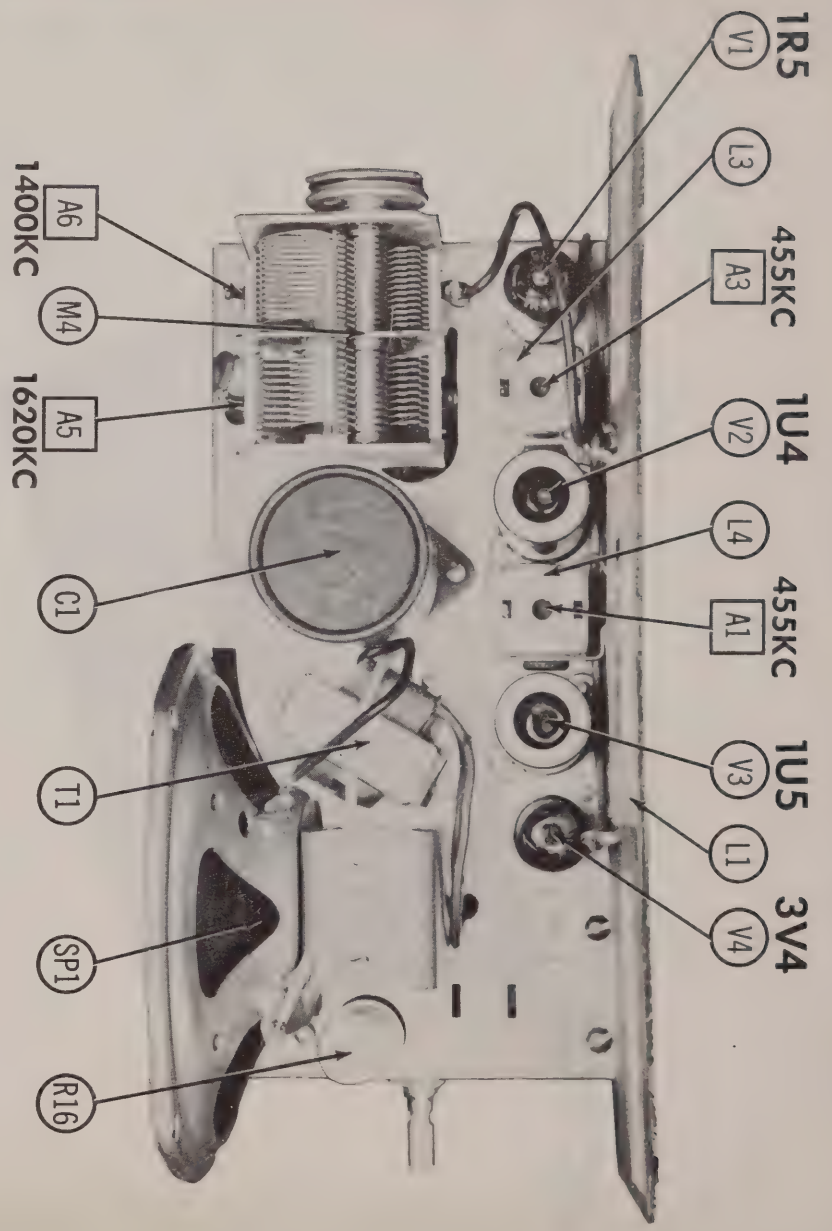
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RAYTHEON PART No.	IRC PART No.	
R2	3.3Meg	½	9B1-104	BTS-3.3Meg	
R3	3.3Meg	½	9B1-104	BTS-3.3Meg	
R4	100KΩ	½	9B1-86	BTS-100K	
R5	22KΩ	½	9B1-78	BTS-22K	
R6	3.3Meg	½	9B1-104	BTS-3.3Meg	
R7	6.8Meg	½	9B1-108	BTS-6.8Meg	
R8	560KΩ	½	C-9B1-95	BTS-560K	Note 1
R9	47KΩ	½	♦201-15005	BTS-47K	
R10	10Meg	½	9B1-37	BTS-10Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RAYTHEON PART No.	IRC PART No.	
R11A	4.7Meg	½		BTS-4.7Meg	
B	1Meg	½	†201-19996	BTS-1Meg	
C	2.2Meg	½		BTS-2.2Meg	
R12	1000Ω	½	9B1-159	BTS-1000	
R13	680Ω	½	9B1-155	BTS-680	
R14	680Ω	½	9B1-155	BTS-680	
R15	30Ω	2	9C-19770		
R16	2650Ω	10	9M-19833		Note 2
R17	2700Ω	1	9B2-169	BTA-2700	
R18	220KΩ	½	C9B1-90	BTS-220K	

♦ Items R9, C7A, C7B are combined in one unit.
† Items R11A, R11B, R11C, C9A, C9B, C9C are combined in one unit.
Note 1. Not used in all Models.
Note 2. Some Models may use a 2800 (10W) resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	9.8KΩ	3.2Ω	432Ω	.4Ω	12C19591	A-3329	A-2900 ①	RO-16 ①	S-11X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	RAYTHEON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.2Ω	18A-19586	ST-107 Mod. P5-V	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	RAYTHEON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω		13E-19844				
L2	Osc. Coil	1.9Ω	5.7Ω	13D-19595	14-1073		69-Osc.	
L3	Input IF	20Ω	20Ω	13B-17397	16-6758	BC-352	12-C1	
L4	Output IF	20Ω	20Ω	13B-17397	16-6758	BC-353	12-C2	

SELENIUM RECTIFIER

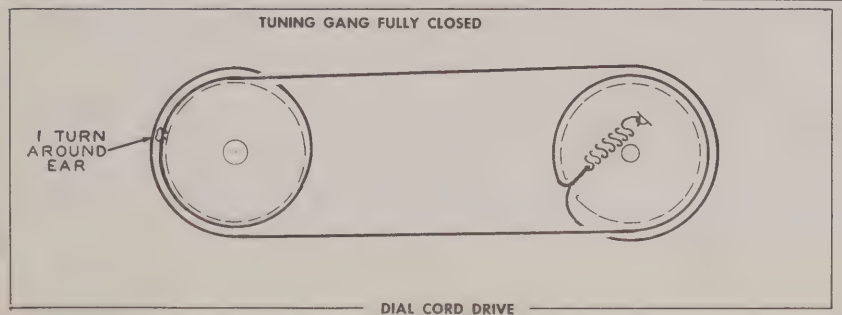
ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	RAYTHEON PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.063ADC	21J19615	NB5	5M4	1003	6S75	75

BATTERIES

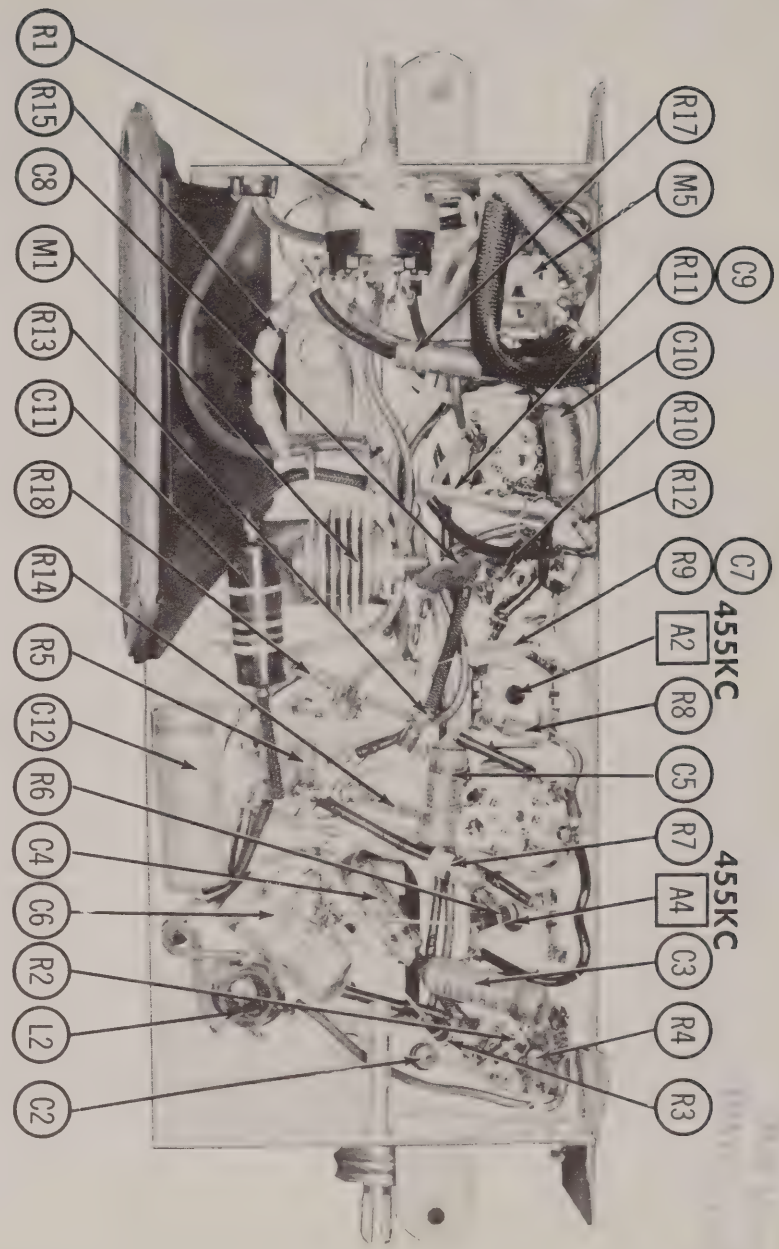
ITEM No.	VOLTAGE	RAYTHEON PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	7.5V "A"		717			C5			
M3	90V. "B"			490			N60		

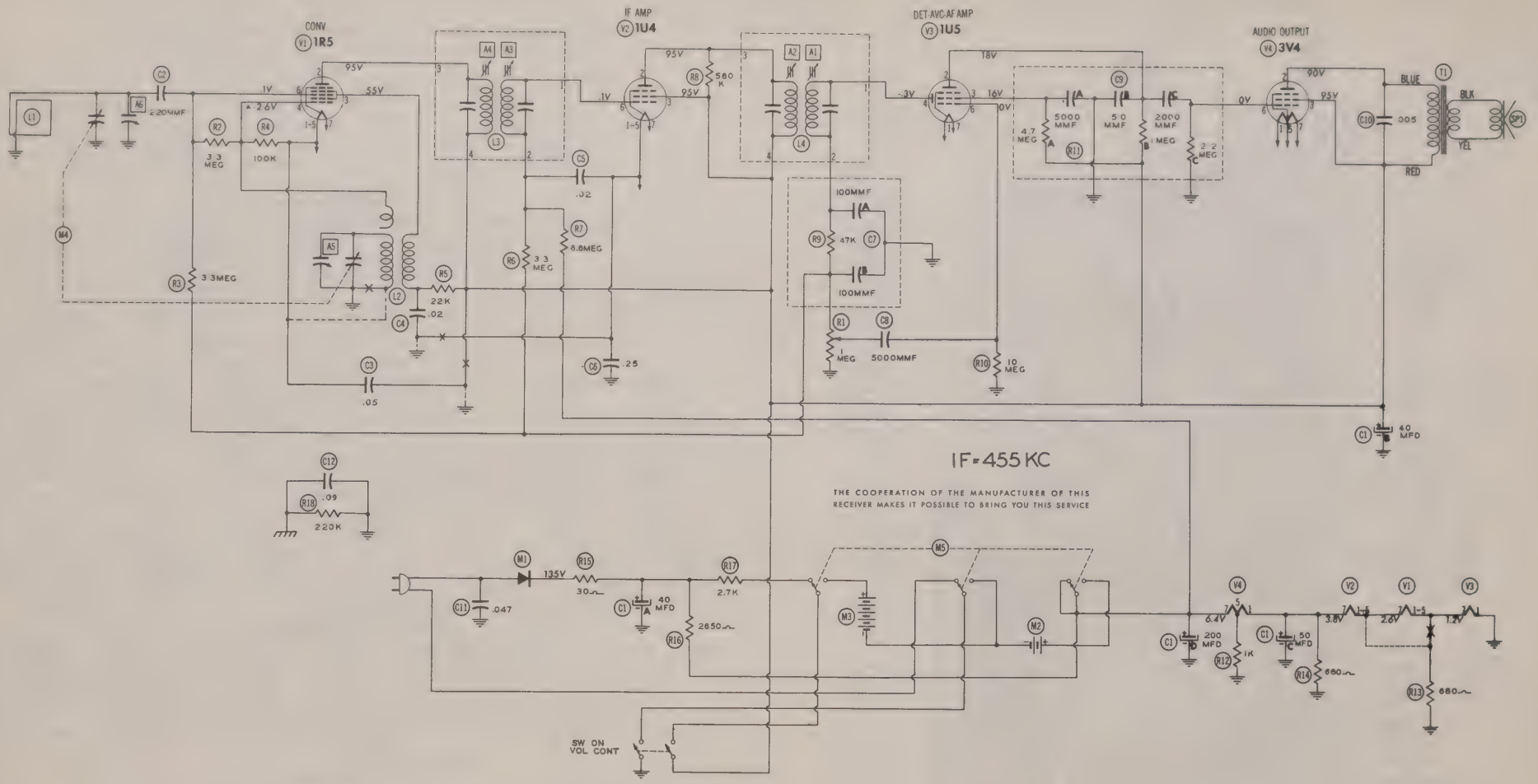
MISCELLANEOUS

ITEM No.	PART NAME	RAYTHEON PART No.	NOTES
M3	Tuning Cap.	8A-21093	25-442, 22-150MMF
M4	Switch	20A-19588	AC-DC Battery Switch
	Cabinet	5C-21144-94	Red
	Escutcheon	5C-21045-95	
	Cover	2M-19609	Bottom
	Handle	5M-20993-95	
	Knob	5B-21009-95	Volume
	Knob	5B-21154-95	Tuning



CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†2.7KΩ	†24.7KΩ	100KΩ	*	1.8Meg	*
V 2	1U4	*	†2.7KΩ	†2.7KΩ	*	INF	4.3Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	1Meg	*	10Meg	*
V 4	3V4	*	†3KΩ	†2.7KΩ	INF	*	2.2Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER

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218-9

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

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MODEL T-1755

SHERATON MODELS
C-2125, T-1755, T-2155 (Series 250XL)

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SHERATON MODELS
C-2125, T-1755, T-2155 (Series 250XL)

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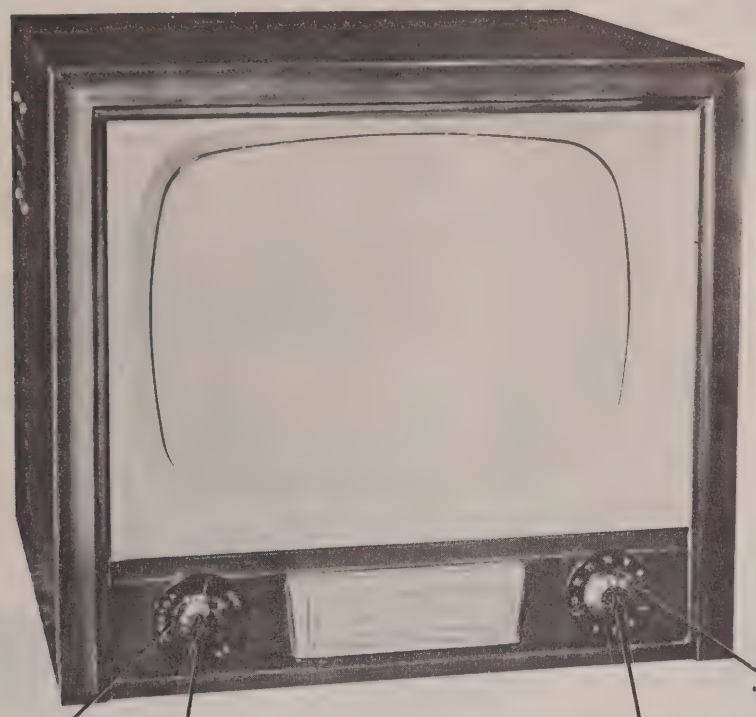

SHERATON MODEL T-1755

TRADE NAME	Sheraton Models C-2125, T-1755, T-2155 (Series 250XL)
MANUFACTURER	Sheraton Television Corp., 200 River St., Red Bank, N.J.
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .15 Amp. @ 117 Volts
TUNING RANGE—	Channels 2 thru 13, Video IF 26.25MC, Sound IF 21.75MC (Intercarrier)

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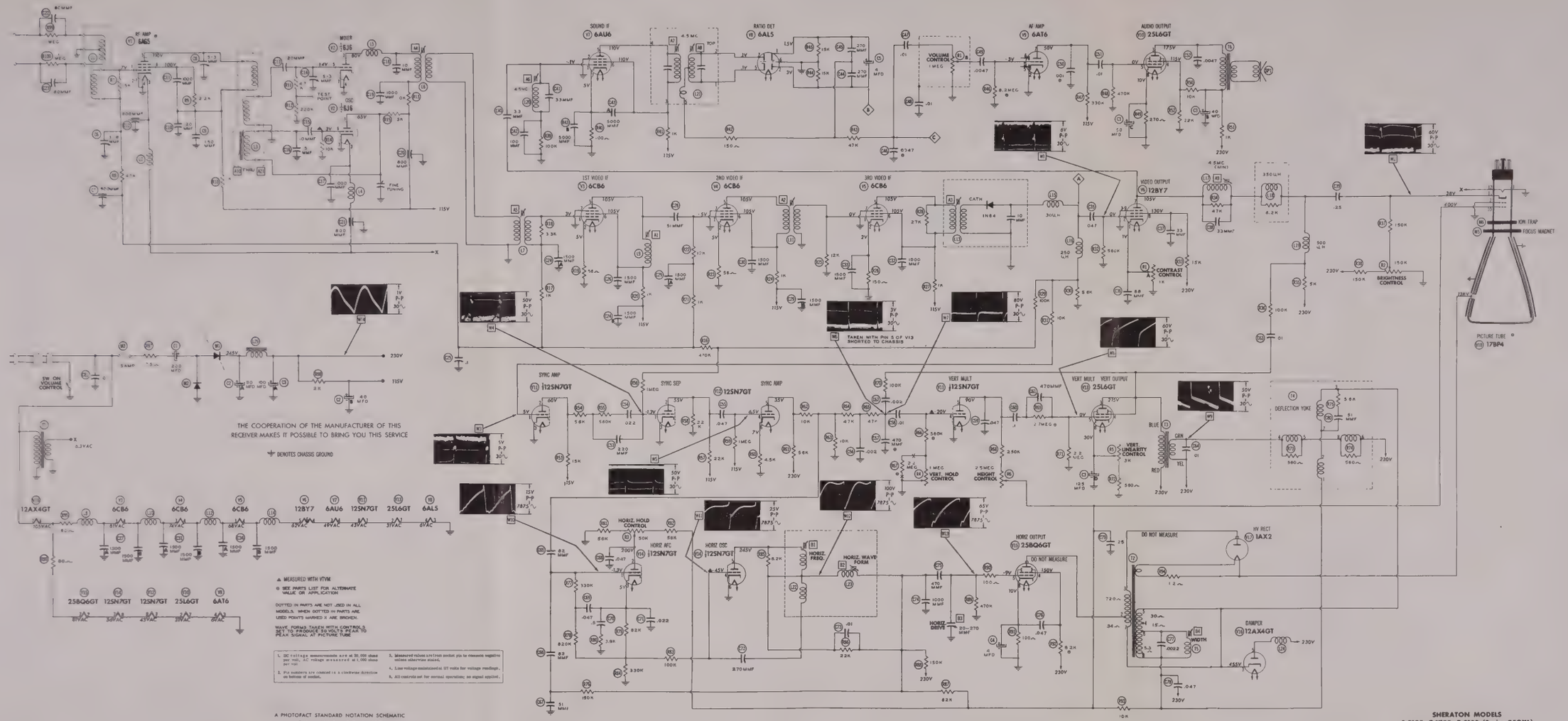
DATE 10 –53 SET 218 FOLDER 10

SHERATON MODELS
C-2125, T-1755, T-2155 (Series 250XL)



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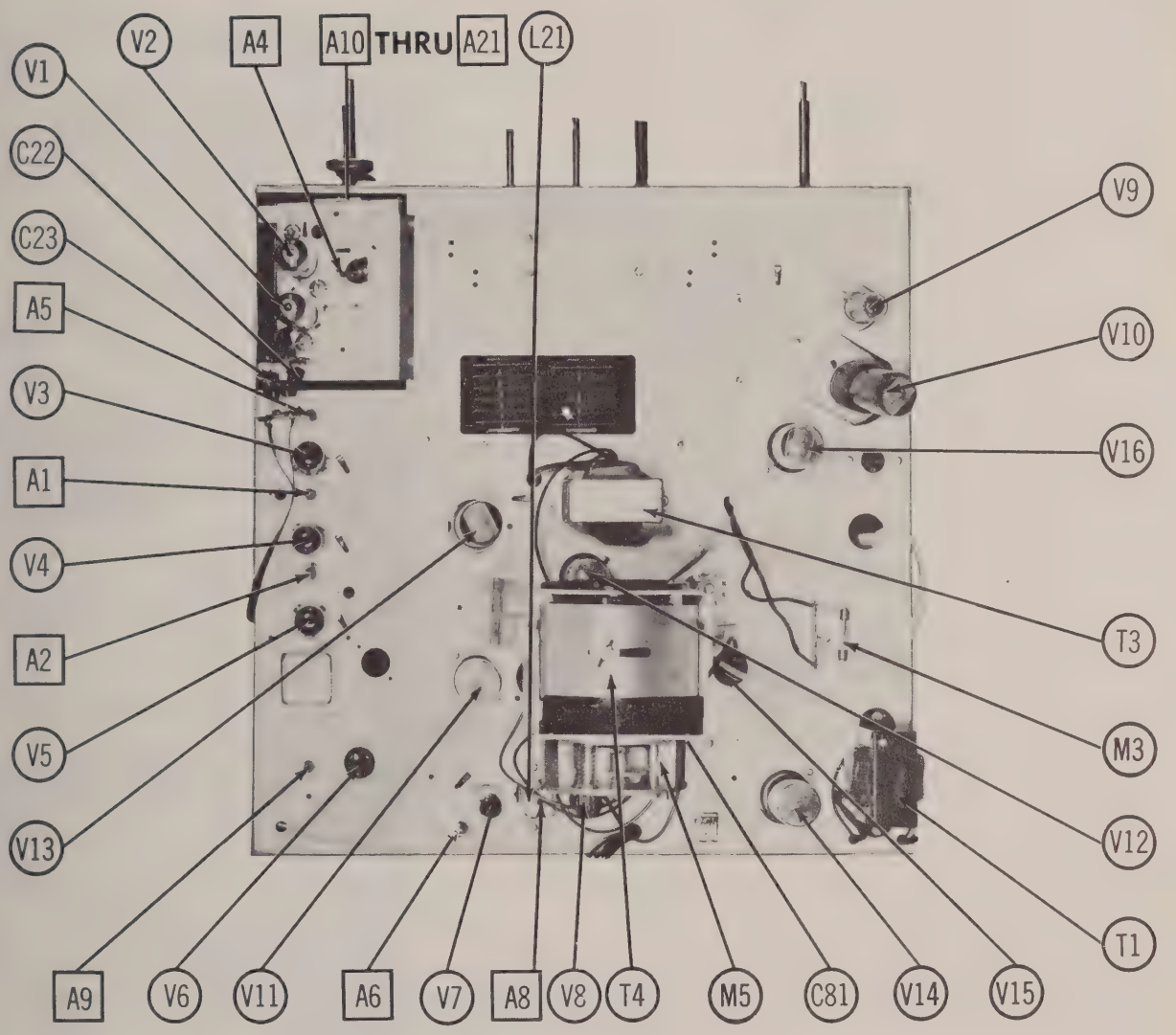

CHASSIS TOP VIEW

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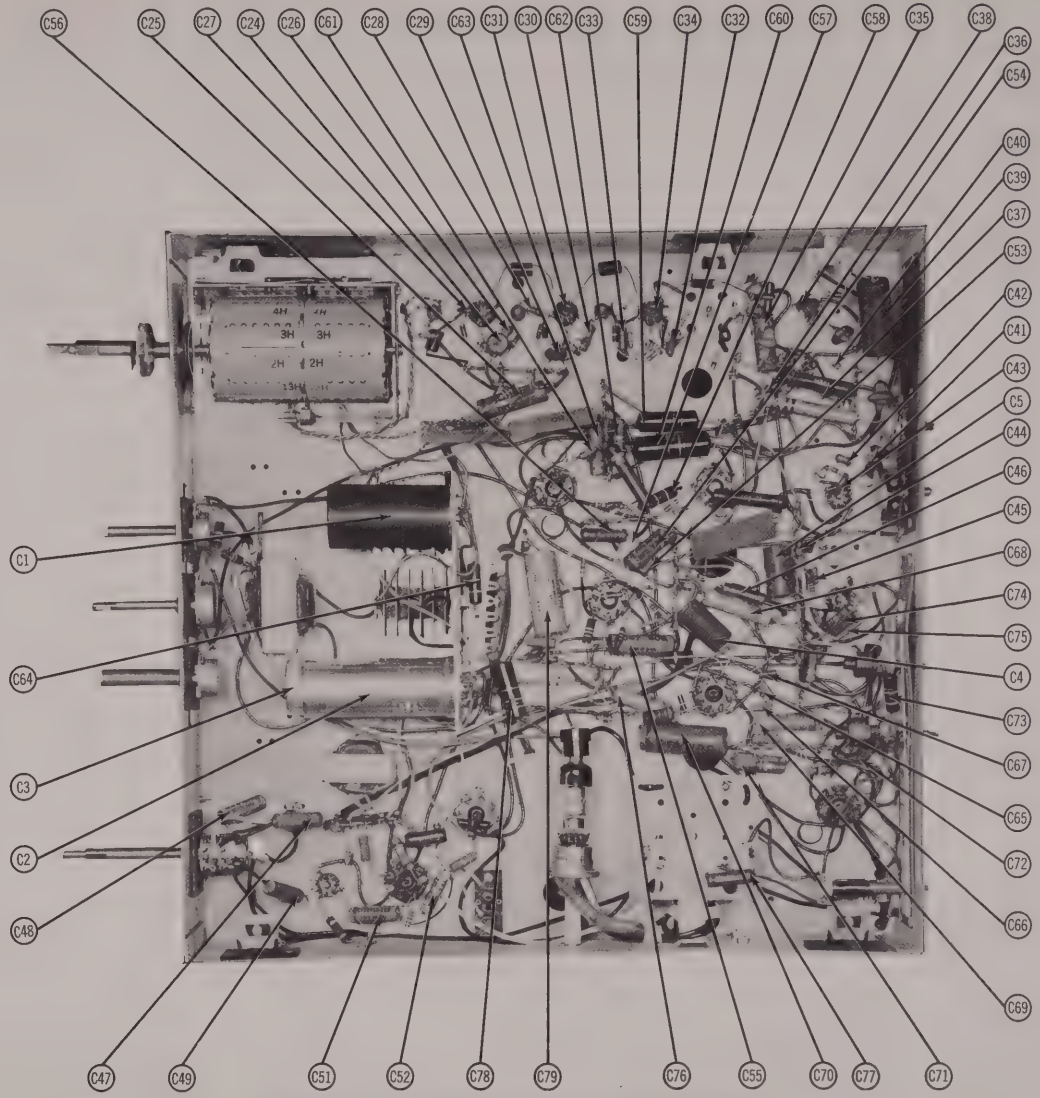
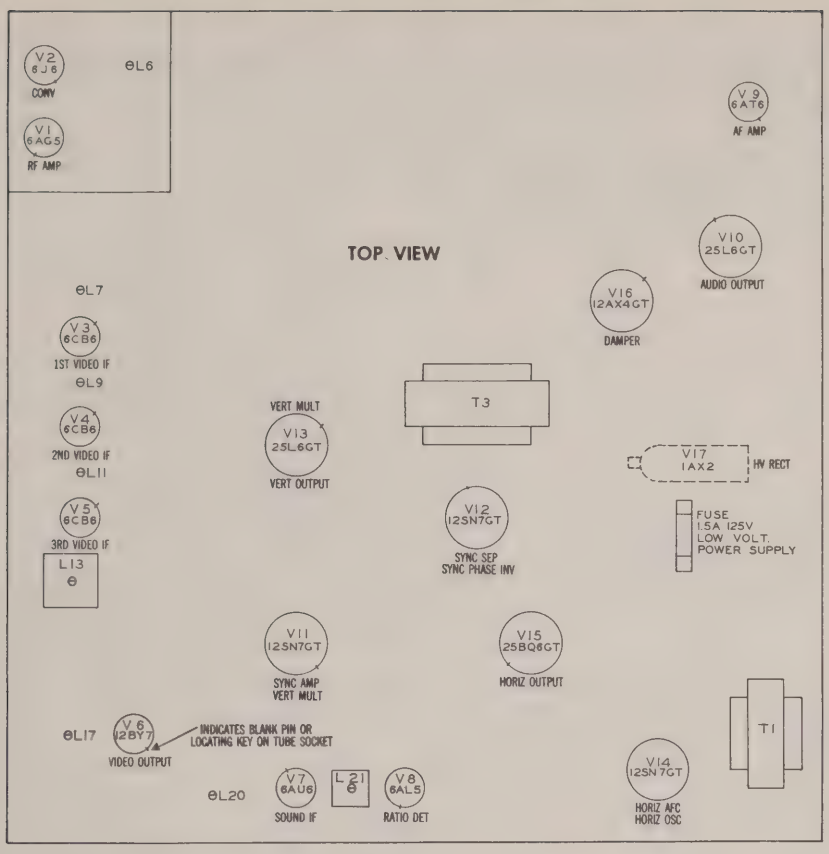


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

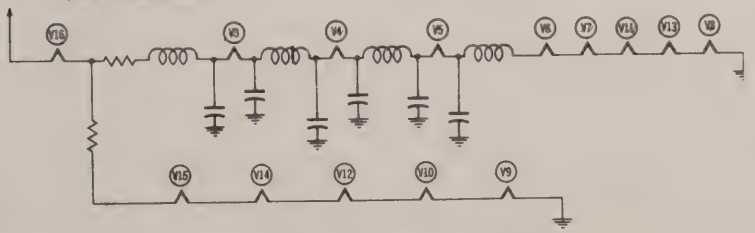
POWER SUPPLY FAILURE
No raster, no sound - Selenium Rectifier (M1 & M2), Fuse(M3)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V18
Has pic, no sound - V7, V8, V9, V10

SYNC FAILURE
No vert. sync - V11, V12, V13
No horiz. sync - V12, V14
No vert. or horiz. sync - V11, V12

SWEEP FAILURE
No raster, has sound - V14, V15, V16, V17, V18
No vertical deflection - V11, V13
Poor vert. linearity or foldover - V11, V13
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V17, M1, M2
Vert. off freq. - V11, V12, V13
Horiz. off freq. - V12, V14

NOTE: Since this receiver employs tubes used in a series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below).



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube (V14).

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 6CB6. Low side to chassis.	Not used	23.5MC	Any not used locally	Use VTVM. DC probe thru 22KΩ to point (A). Common to chassis.	A1	Connect the negative lead of a 3 Volt battery to the ungrounded side of C25. Connect the positive lead to chassis. Adjust for maximum deflection.
2.	"	"	"	25.75MC	"	"	A2	"
3.	"	"	"	24.6MC	"	"	A3	"
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	Set sweep to a low band channel. (10MC Swp)	21.75MC 26.25MC	Low band channel not used locally	Vert. Amp. of scope thru detector (Fig. 1) to pin 5 (plate) of 6CB6 (V3). Low side to chassis.	A4, A5	Replace 3 volt battery in step 3 with a 1½ volt battery. Adjust for response curve similar to Fig. 2.
5.	Check overall video IF response for curve similar to Fig. 3. If necessary, retouch A1 thru A3 for desired response.							

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (C). Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizing capacitor C5. Adjust for curve of maximum amplitude and symmetry as in Fig. 3.
7.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A8	Reconnect capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector to pin 11 of picture tube Common to chassis.	A9	Adjust for MINIMUM deflection.

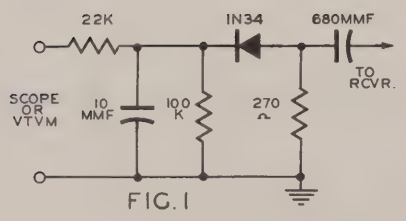


FIG. 1

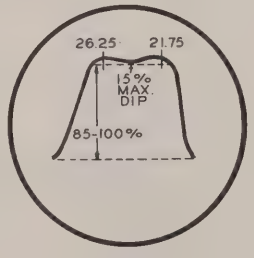


FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 27KΩ to point (A). Low side to chassis.	A10	Adjust to place sound marker as in Fig.5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A11	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A12	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A13	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A14	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A15	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A16	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A17	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A18	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A19	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A20	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A21	

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

FIG. 3

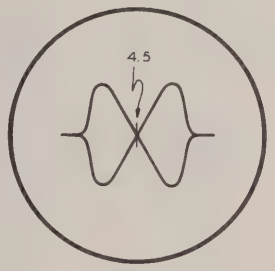


FIG. 4

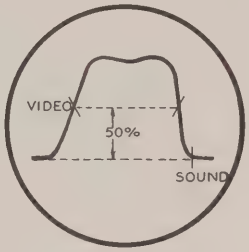
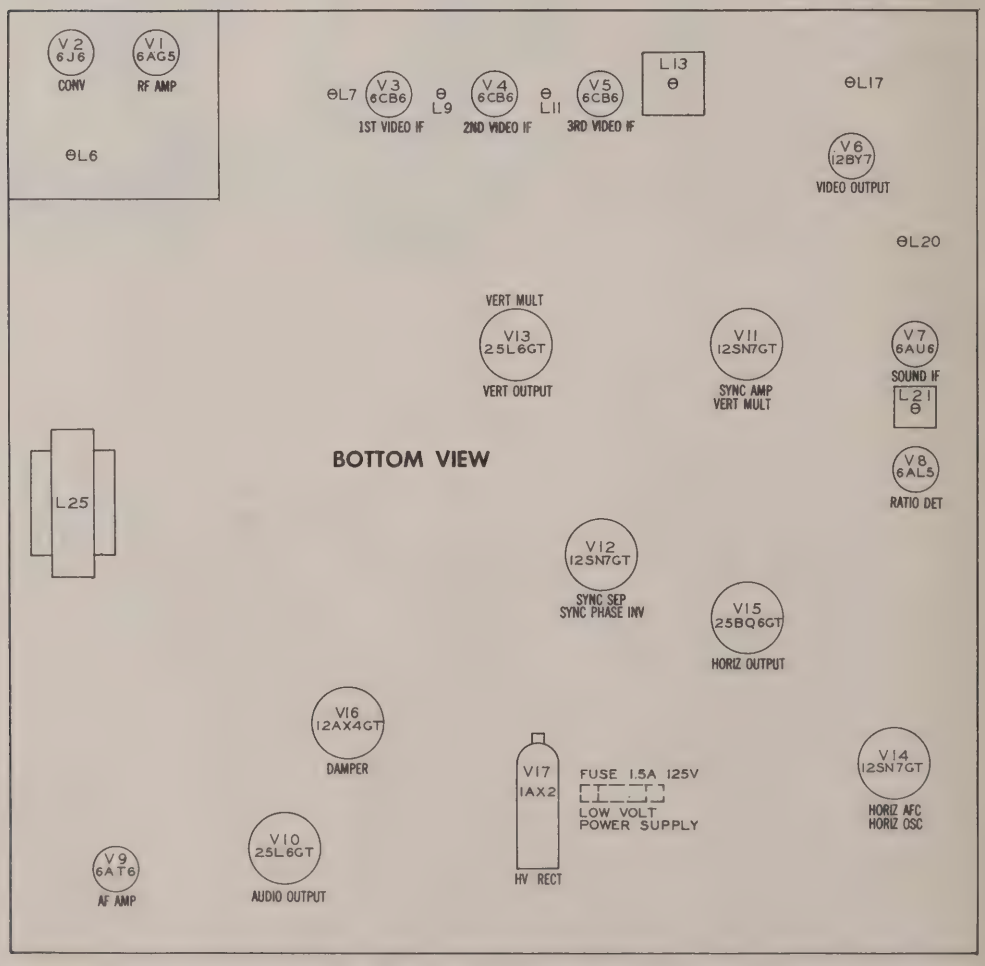


FIG.5

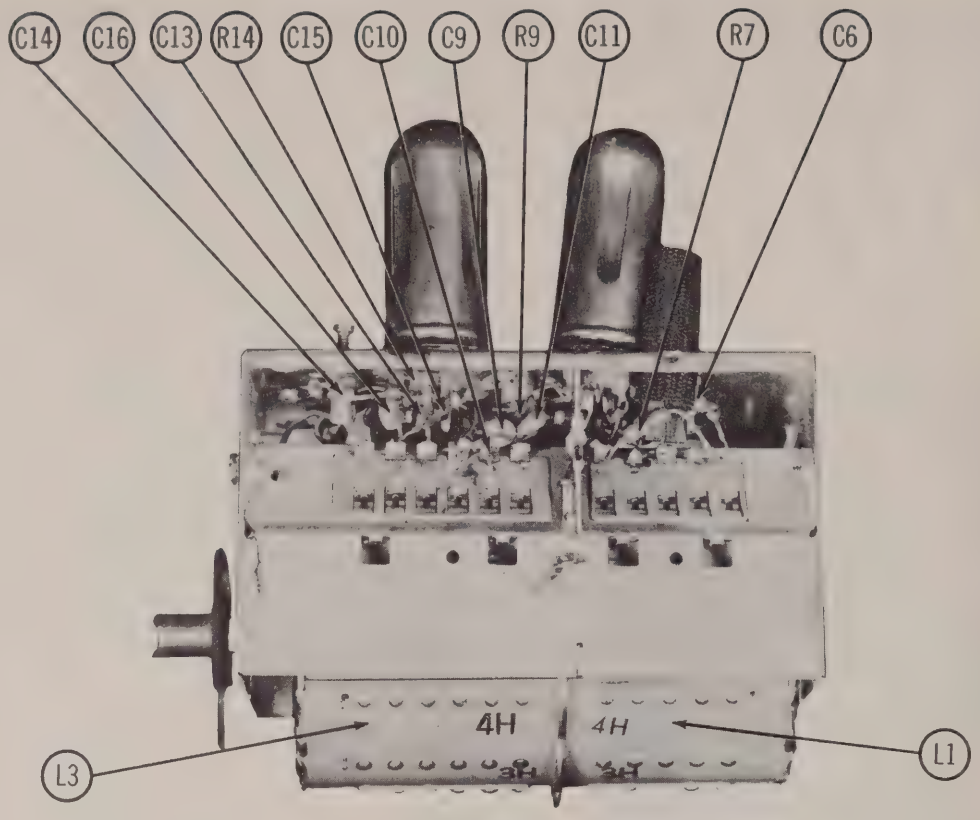
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	610KΩ	0Ω	.1Ω	0Ω	†3KΩ	†5.2KΩ	0Ω		
V 2	6J6	†17KΩ	†12KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	580KΩ	56Ω	30Ω	29Ω	†3KΩ	†3KΩ	0Ω		
V 4	6CB6	590KΩ	56Ω	29Ω	28Ω	†3KΩ	†3KΩ	0Ω		
V 5	6CB6	.5Ω	150Ω	28Ω	26Ω	†3KΩ	†3KΩ	0Ω		
V 6	12BY7	40Ω	560KΩ	0Ω	24Ω	26Ω	INF	†5KΩ	†15KΩ	0Ω
V 7	6AU6	100KΩ	0Ω	24Ω	22Ω	†3KΩ	†3KΩ	100Ω		
V 8	6AL5	15KΩ	15KΩ	0Ω	3Ω	INF	0Ω	INF		
V 9	6AT6	8.2Meg	0Ω	0Ω	5Ω	INF	INF	†330KΩ		
V 10	25L6GT	INF	22Ω	†1.2 KΩ	†8.3KΩ	470KΩ	INF	4Ω	270Ω	
V 11	12SN7GT	16KΩ	†17KΩ	0Ω	850KΩ	‡1Meg	0Ω	13Ω	22Ω	
V 12	12SN7GT	1.1Meg	†14KΩ	0Ω	†1Meg	†21KΩ	4.5KΩ	22Ω	27Ω	
V 13	25L6GT	0Ω	17Ω	†755Ω	†755Ω	2.2Meg	INF	3Ω	1.3KΩ	
V 14	12SN7GT	1.5Meg	‡70KΩ	410KΩ	430KΩ	†150KΩ	0Ω	31Ω	27Ω	
V 15	25BQ6GT	†300KΩ	31Ω	†16.5KΩ	†8.2KΩ	470KΩ	470KΩ	34Ω	100Ω	TOP CAP ‡34Ω
V 16	12AX4GT	INF	†56Ω	100KΩ	INF	†60Ω	INF	3Ω	6Ω	
V 17	1AX2		PINS	1 - 9	HAVE	INF	RESISTANCE			TOP CAP ‡755Ω
V 18	17BP4	0Ω	0Ω	Pin 10 ‡10KΩ	Pin 11 100KΩ	Pin 12 .1Ω				

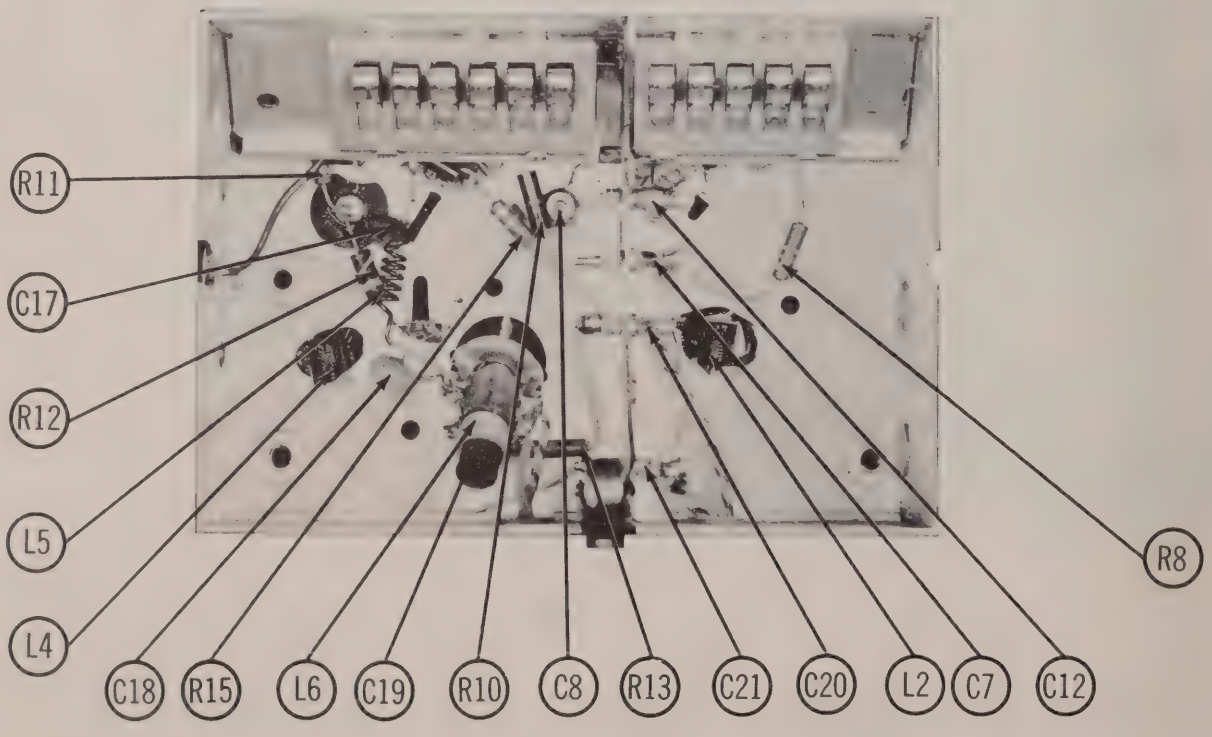
NOTE: FILAMENT RESISTANCE MEASUREMENTS INCLUDE PARALLEL EFFECT OF T1 PRIMARY.
† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN #3 OF V16.



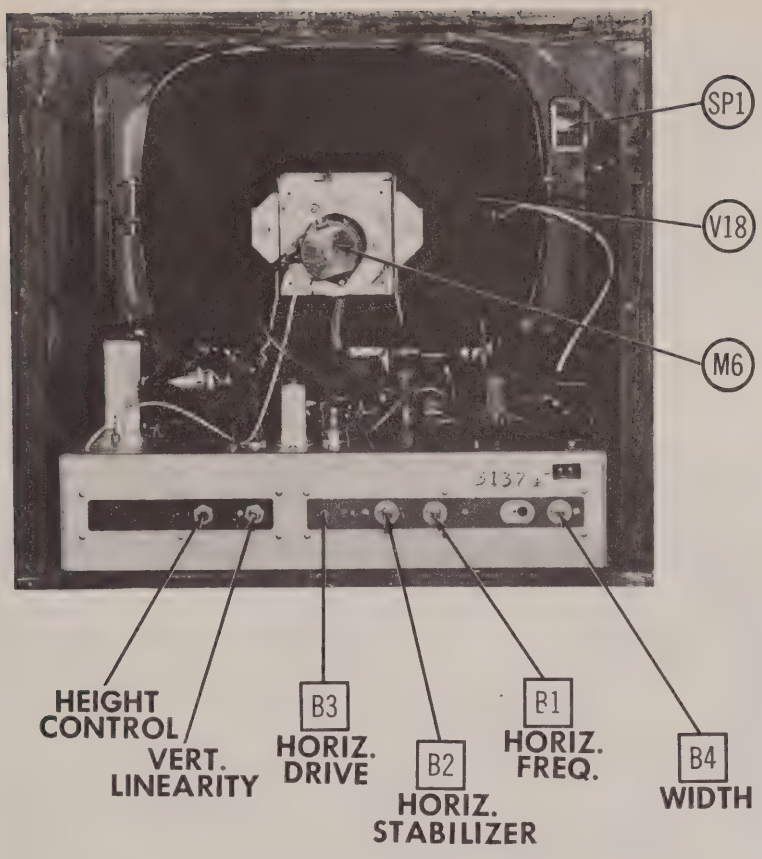
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV signal, preferably a test pattern.

Turn the horizontal hold control fully clockwise.

The picture shows a tendency to lose sync, with up to 4½ diagonal bars sloping down to the right. Turn the horizontal hold slowly to the extreme counter clockwise position. The picture should lose sync with several bars sloping down to the left. If the receiver passes the above check no horizontal adjustment is necessary.

Set the horizontal hold at mid-range and adjust the horizontal frequency slug (B1). Turn the horizontal hold control fully counter clockwise and momentarily, remove the signal so that the sync is lost. Turn the hold control fully clockwise and note the least number of bars just before sync pull in. If the number is more than 3½ or less than 2½ slightly readjust B1.

HORIZONTAL WAVEFORM ADJUSTMENT

Adjustment of the horizontal waveform slug (B2) should not be made unless it is known to be necessary. Connect the vertical input of an oscilloscope through a low capacity probe to the junction of the horizontal stabilizing coil (L23) and the horizontal oscillator coil (L22). View the waveform on the scope and adjust B2 for broad and narrow peaks of equal height as in Fig. 6.

DRIVE AND WIDTH ADJUSTMENTS

Adjust the horizontal drive trimmer (B3) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust width slug (B4) for a picture slightly wider than necessary to fill the picture mask horizontally.

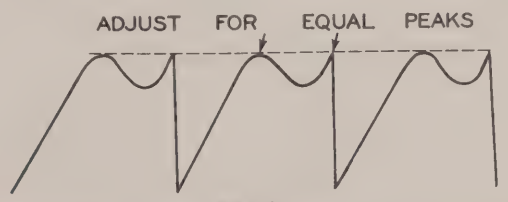


FIG. 6

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V14, V15 and V16. Check adjustment of width coil (B4) and horizontal drive (B3). Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check C77, C78, C79, T2, T4A, R92, C76 and other associated components.	Check C74, C75 and other components associated with V14.

DRIVE LINES

Check by substitution V14, V15 and V16. Check adjustment of horizontal drive (B3). Check C74, C75, C78, C79, T2, T4A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V14, V15 and V16. Check width coil adjustment (B4) and horizontal drive adjustment (B3). Check components associated with V14, V15 and V16 especially T2 and T4A.

FOLDS

Check by substitution V14, V15 and V16. Proceed as outlined under "Drive Lines".

XMAS TREE EFFECT

Substitute V14. Check L22, L23, C72, C73, C74 and other associated circuit components.

VERTICAL

LOSS OF SWEEP

Check by substitution V11 and V13. Check waveform at W8.

If Satisfactory	If Unsatisfactory
Check T3, T4B and other associated components.	Check C59, C60 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V11 and V13. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V11 and V13. Check adjustment of height and vertical linearity controls. Check C3D, T3, T4B and other associated circuit components.

COMPRESSED AT TOP

Check by substitution V11 and V13. Check adjustment of height and linearity controls. Check C3D, C60, C61, T3, T4B and other associated components.

FOLDS

Check by substitution V11 and V13. Check components associated with V11B and V13.

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V14. Check adjustment of horizontal frequency (B1) and horizontal stabilizing coil (B2). Check C65, C66, C67, C69, C68, C72, C73, L22, L23 and other associated circuit components.

CRITICAL HOLD

Substitute V14, V12 and V11. Proceed as outlined under "Loss of Sync".

HORIZONTAL PULL

Check by substitution V11, V12 and V14. Check components associated with these stages. Check video amplifier stage for overload and/or 60 cycle modulation.

VERTICAL

LOSS OF SYNC

Check by substitution V11 and V12. Check waveform at W6.

If Satisfactory	If Unsatisfactory
Check components associated with V11B.	Check vertical integration network (C56, C57, C58, R64 and R65). Check other components associated with V11A and V12.

CRITICAL HOLD

Check by substitution V11 and V12. Proceed as outlined under "Loss of Sync".

TRIGGERING

Check by substitution V11 and V12. Check circuit near these stages for filament lead dress.

VIDEO

LOSS OF VIDEO

Check C39, picture tube and other associated circuit components.

SOUND BARS

Check adjustment of local oscillator. Check adjustment of 4.5MC trap (A9).

NEGATIVE PICTURE

Substitute V6. Check video detector crystal and assembly. Check components associated with V6. Check picture tube (V18). Check AGC for proper operation.

POOR CONTRAST

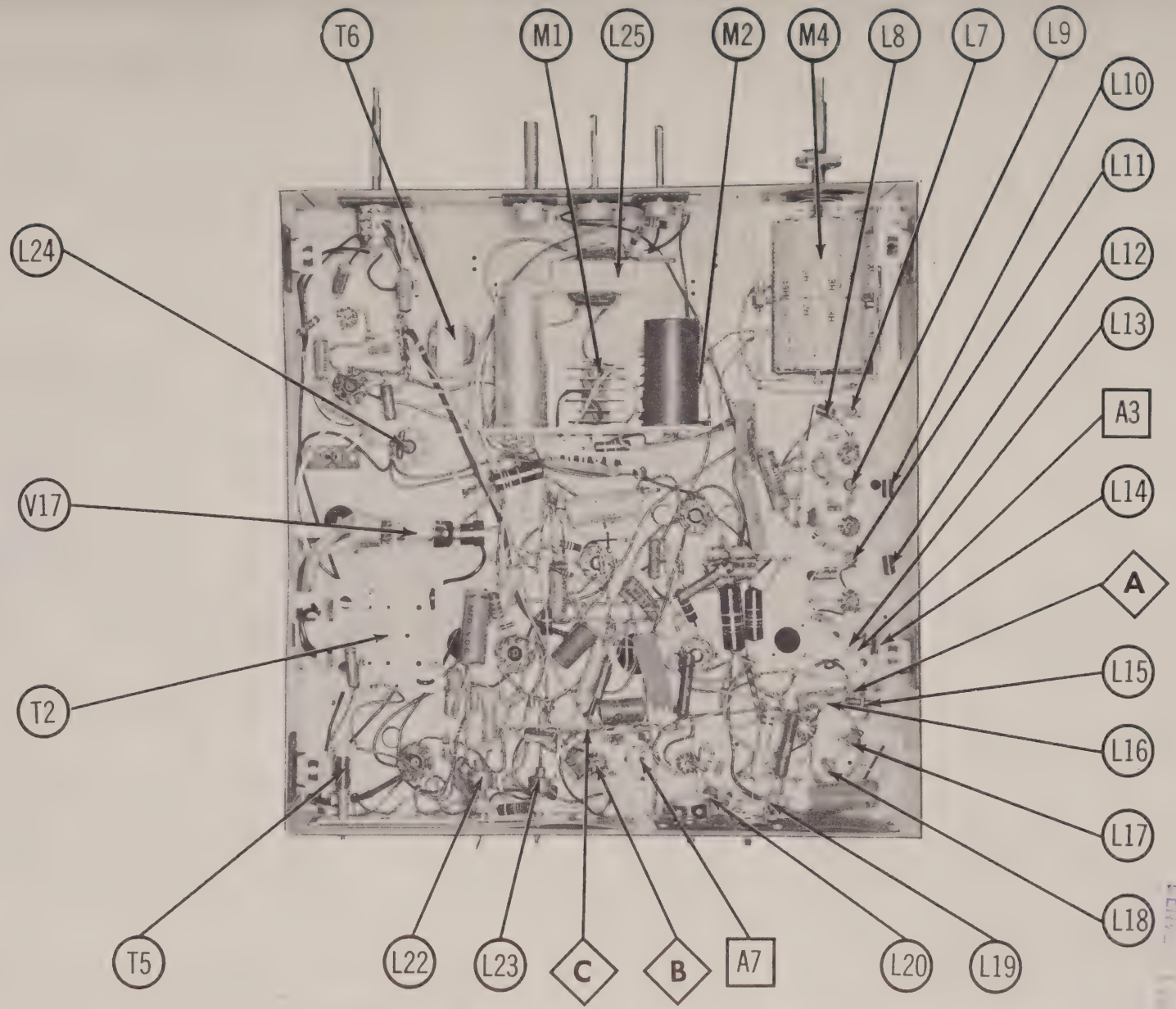
Substitute V6. Check video detector assembly. Check all components associated with V6. Check picture tube.

SMEAR

Substitute V6. Check video detector assembly. Check C35 and C39. Check L18. Check R35, R37, and R38 for change of value. Check picture tube for low emission and/or gassy condition.

ONE WIDE BLACK BAR ACROSS PICTURE

Check tuner, video IF and video amplifier tubes for heater to cathode leakage.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SHERATON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6AG5	6AG5	7BD	
B	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J5	6J6	7BF	
V3	Int. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AF Amplifier	6AT6	6AT6	7BT	
V10	Audio Output	25L6GT	25L6GT	7S	
V11	Sync Amplifier-Vert. Mult.	12SN7GT	12SN7GT	8BD	
V12	Sync Separator-Sync Phase Inv.	12SN7GT	12SN7GT	8BD	
V13	Vert. Mult.-Vert. Output	25L6GT	25L6GT	7S	
V14	Horiz. AFC-Horiz. Oscillator	12SN7GT	12SN7GT	8BD	
V15	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V16	Damper	12AX4GT	12AX4GT	4CG	
V17	HV Rectifier	1AX2	1AX2	8Y	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SHERATON PART No.	SYLVANIA PART No.	GENERAL ELECTRIC TYPE PART No.	RTMA BASE TYPE	NOTES
V18A	17BP4	17BP4		12D	① Circuit changes necessary
		17BP4A ①		12D	
		17HP4 ①	17HP4 ①	12C	
		17RP4 ①	17RP4 ①	12C	
B	21EP4			12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SHERATON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	200	150	ECE-1004	APH51-71		XB006		FP216.1	TVL-1431	
C2A	.1Ω	300	ECE-1005	E4B319				FP140	TVL-2589	
B	40	300						TC76		
C3A	.1Ω	300	ECE-1006	E4D621					R1391	
B	40	300								
C	50	50								
D	.1Ω	50								
C4	4	50	ECE-2001	PRS150/4		BR415		TC30	TVA-1402	
C5	4	50		PRS150/4		BR415		TC30		
C6	3-8				829-10					
C7	800			CN-1-001	MFT-1000				508C-D1	
C8	.5-3				829-3			CT565A		
C9	150			BPD-00015	DD-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C10	120			BPD-00012	DD-121	TM5T12	GP2K-121	UC-5313	5GA-T12	
C11	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C12	900			CN-1-001	MFT-1000				503C-D1	
C13	120			BPD-00012	DD-121	TM5T12	GP2K-121	UC-5313	5GA-T12	
C14	.5-3				829-3			CT565A		
C15	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q5	
C16	5			SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C17	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C18	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q5	
C19	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	800			CN-1-001	MFT-1000				503C-D1	
C21	800			CN-1-001	MFT-1000				503C-D1	
C22	180	500	M-80-5-F-180							
C23	180	500	M-80-5-F-180							
C24A	1500		C-80-5M-153	BPD-2X0015	DD2-152	TM5DD15	GP2L-152	513-0015	DCD-5215	5HK-2D15
B	1500									
C25	.1	400	P-40-L-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C26	1000		C-20-5C-152	SI1000	D5-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C27A	1500		C-80-5M-153	BPD-2X0015	DD2-152	TM5DD15	512-0015	DCD-5215	5HK-2D15	
B	1500									
C28	51		C-20-5F-510							
C29A	1500		C-80-5M-153	BPD-2X0015	DD2-152	TM5DD15	512-0015	DCD-5215	5HK-2D15	
B	1500									
C30	1500		C-20-5C-152	SI1500	D5-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C31A	1500		C-80-5M-153	BPD-2X0015	DD2-152	TM5DD15	512-0015	DCD-5215	5HK-2D15	
B	1500									
C32	1000		C-20-5F-102	SI1000	D5-102	TM5D1	801-001	DC-521	5HK-D1	
C33	1500		C-20-5G-152	SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C34A	1500		C-80-5M-153	BPD-2X0015	DD2-152	TM5DD15	512-0015	DCD-5215	5HK-2D15	
B	1500									
C35	.047	400	P-40-L-473	P488-047	DF-503	PTE4S47		PT447	4TM-S47	
C36	68		C-20-5G-680	SI68	D5-680		GP1K-680	UC- 5468	5GA-Q68	
C37	33		C-20-5F-330	SI33	D5-330		GP1K-330	UC-5433	5GA-Q33	
C38	33		C-20-5F-330	SI33NP 0	TCZ-33		NP0K-330	ZT-5433	5TCC-Q33	
C39	.25	400	P-40-L-254	P488-25		PTE4P25		PT4025	4TM-P25	
C40	3.3		C-20-5F-030	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C41	33		C-20-5F-330	SI33	D5-330		GP1K-330	UC-5433	5GA-Q33	
C42	100		C-20-5F-101	SI100	D5-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C43A	5000		C-80-5M-503	BPD-2X005	DD2-502	TM5DD5	81-005	DCD-525	5HK-2D5	
B	5000						81-005			
C44	270		C-20-5G-271	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C45	270		C-20-5G-271	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C46	.0047	400	P-40-L-472	P488-0047	D6-472	PTE6D47	GP2-333-472	PT6347	6TM-D47	Note 2
C47	.01	400	P-40-L-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C48	.01	400	P-40-L-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C49	.0047	600	P-40-L- 472	P488-0047	D6-472	PTE6D47	GP2-333-472	PT6347	6TM-D47	
C50	.001	400	P-40-L-102	P488-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	Note 1
C51	.01	400	P-40-L-103	P488-001	D6-103	PTE6D1	GP2L-103	PT621	6TM-D1	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SHERATON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C52	.0047	1000	P-40-N-472	P1088-0047			PTE16D47		PT6247	MB-D47
C53	220		C-20-5F-221	SI220	D5-221			GP2K-221	UC-5322	5GA-T22
C54	.022	400	P-40-L-223	P488-022	DF-303	PTE4S22			PT4122	4TM-S22
C55	.047	400	P-40-L-473	P488-047	DF-503	PTE4S47			PT4147	4TM-S47
C56	.002	600	P-40-L-222	P688-002	D6-202	PTE6D2	GP2-333-202		PT622	6TM-D2
C57	470	500	M-80-5-F-471							Note 3
C58	.01	400	P-80-L-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C59	.047	600	P-80-M-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C60	.1	600	P-80-M-104	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C61	470		C-20-5G-471	SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C62	.002	600	P-40-L-222	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C63	.01	400	P-40-L-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C64	.01	400	P-80-L-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C65	82	500	M-80-5-F-820							
C66	82	500	M-80-5-F-820							
C67	51		C-20-5F-510							
C68	.047	600	P-40-L-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C69	.047	600	P-40-L-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C70	.5	200	P-40-K-474	P388-5		PJ2P5		PT405	2TM-P5	
C71	.022	400	P-40-L-223	P488-022	DF-303	PTE4S22		PT4122	4TM-S22	
C72	270	1000	M-80-10-F-271							
C73	.01	400	P-80-L-103	P488-01		D6-103		PT411	4TM-S1	
C74	1000	1000	M-80-10-F-102							
C75	470	500	M-80-5-F-471							
C76	.047	600	P-40-L-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C77	.0022	600	P-40-L-222	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C78	.047	600	P-80-M-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C79	.25	600	P-40-M-254	684-25		PTE6P25		PT6025	6TM-P25	
C80	51	1500								
C81	.01	400	P-80-L-103	4892X-01		P7481		PT411	4TM-S1	

Note 1. Not used in all Models.
Note 2. Some Models use 1500MMF in this application (Part #C-20-5G-152)
Note 3. Some Models use .0022MFD in this application (Part #P-40-L-222)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SHERATON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω	½	EP-125	QJ-476 *	RTV-206	SBB-701-8	WF13	Contrast-Panel
B	1Meg						UR16A	Volume-Rear
C	Switch						US-26	Attach to R1B
R2A	150KΩ	½	EP-126A	QU-129	AG-52-S	AB-46	U-43	Brightness
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R2A
R3A	50KΩ	½	EP-128	QU-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	1Meg	½	EP-118	QU-137	AG-61-S	AB-59	U-54	Vert. Hold-Note
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5A	3000Ω	2	EP-118A	WK-3000	A43-3000	YK-133	R3000L	Vert. Linearity-Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R5A
R6A	2.5Meg	½	EP-101A	QU-239	AG-84-S	AB-83	SU-585	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A

Note: Some Models may use alternate control (part #EP-127).
* CONCENTRIKIT EQUIVALENT: KIT K-2, BASE ELEMENTS & SHAFTS B17-108 & & P1-220 (Panel) B13-137 & R1-304 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SHERATON PART No.	IRC PART No.	NOTES
R7	15KΩ			BTS-15K	
R8	47KΩ			BTS-47K	
R9	2200Ω			BTS-2200	
R10	1000Ω			BTS-1000	
R11	4700Ω			BTS-4700	
R12	220KΩ				
R13	10KΩ			BTS-10K	
R14	10KΩ			BTS-10K	
R15	15KΩ			BTS-15K	
R16	470KΩ			BTS-470K	
R17	1000Ω		ERA-1021	BTS-1000	
R18	33000Ω 5%		ERA-3325	BTS-3300 5%	
R19	56Ω		ERA-5601	BTS-56	
R20	1000Ω		ERA-1021	BTS-1000	
R21	1000Ω		ERA-1021	BTS-1000	
R22	12KΩ 5%		ERA-1235	BTS-12K 5%	
R23	56Ω		ERA-5601	BTS-56	
R24	1000Ω		ERA-1021	BTS-1000	
R25	12KΩ 5%		ERA-1235	BTS-12K 5%	
R26	150Ω		ERA-1511	BTS-150	
R27	1000Ω		ERA-1021	BTS-1000	
R28	27KΩ		ERA-2731	BTS-27K	
R29	100KΩ		ERA-1041	BTS-100K	
R30	56000Ω 5%		ERA-5625	BTS-5600 5%	
R31	10KΩ		ERA-1031	BTS-10K	
R32	560KΩ		ERA-5641	BTS-560K	
R33	15KΩ	½	ERB-1531	BTA-15K	
R34	47KΩ	½	ERA-4731	BTS-47K	
R35	5000Ω	6	ERD-128		
R36	100KΩ	1	ERB-1041	BTA-100K	
R37	150KΩ	½	ERA-1541	BTS-150K	
R38	150KΩ	½	ERA-1541	BTS-150K	
R39	100KΩ	½	ERA-1041	BTS-100K	
R40	100Ω	½	ERA-1011	BTS-100	
R41	1000Ω	½	ERA-1021	BTS-1000	
R42	150Ω	½	ERA-1511	BTS-150	
R43	47KΩ	½	ERA-4731	BTS-47K	
R44	15KΩ	½	ERA-1531	BTS-15K	
R45	15KΩ	½	ERA-1531	BTS-15K	
R46	8.3Meg	1		BTA-8.2Meg	Note 1

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SHERATON PART No.	IRC PART No.	NOTES
R47	330KΩ	½	ERA-3341	BTS-330K	
R48	470KΩ	½	ERA-4741	BTS-470K	
R49	270Ω	1	ERB-2711	BTA-270	
R50	10KΩ	1	ERB-1031	BTA-10K	
R51	1000Ω	5	ERD-105	1 3/4A-1000	
R52	22KΩ	1	ERB-2331	BTA-22K	
R53	15KΩ	5		1 3/4A-15K	
R54	5600Ω	½	ERA-5621	BTS-5600	
R55	560KΩ	½	ERA-5641	BTS-560K	
R56	1Meg	½	ERA-1051	BTS-1Meg	
R57	22KΩ	½	ERA-2231	BTS-22K	
R58	22KΩ	½	ERA-2331	BTS-22K	
R59	1Meg	½	ERA-1051	BTS-1Meg	
R60	4500Ω 5%				
R61	56KΩ	1	ERB-5631	BTA-56K	
R62	10KΩ	½	ERA-1031	BTS-10K	
R63	10KΩ	½	ERA-1031	BTS-10K	
R64	47KΩ	½	ERA-4731	BTS-47K	
R65	47KΩ	½	ERA-4731	BTS-47K	
R66	560KΩ	½	ERA-5641	BTS-560K	Note 2
R67	2.2Meg	½	ERA-2251	BTS-2.2Meg	Note 5
R68	250KΩ	1			
R69	2.7Meg	½		BTS-2.7Meg	Note 3
R70	100KΩ	1	ERB-1041	BTA-100K	
R71	2.2Meg	½	ERA-2251	BTS-2.2Meg	
R72	560Ω	½	ERA-5611	BTS-560	
R73	560Ω	½	ERA-5611	BTS-560	
R74	560Ω	½	ERA-5611	BTS-560	
R75	5600Ω	½	ERA-5621	BTS-5600	
R76	150KΩ	½	ERA-1541	BTS-150K	
R77	330KΩ	½	ERA-3341	BTS-330K	
R78	820KΩ	½	ERA-8241	BTS-820K	
R79	82KΩ 5%	1	ERB-8235	BTA-82K 5%	
R80	3900Ω	½	ERA-3921	BTS-3900	
R81	56KΩ	1	ERB-5631	BTA-56K	
R82	56KΩ	1	ERB-5631	BTA-56K	
R83	100KΩ 5%	1	ERB-1045	BTA-100K 5%	
R84	330KΩ 5%	1	ERB-3345	BTA-330K 5%	
R85	8200Ω	½	ERA-8221	BTS-8200	
R86	22KΩ	½	ERA-1531	BTS-22K	

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SHERATON PART No.	IRC PART No.	NOTES
R87	82KΩ	1	ERB-8231	BTA-82K	
R88	150KΩ	½	ERA-1541	BTS-150K	
R89	470KΩ	½	ERA-4741	BTS-470K	
R90	100Ω	½	ERA-1011		
R91	100Ω	2	ERC-1001	BW-2-100	
R92	8200Ω	3		BTS-8200	Note4
R93	10KΩ	1	ERB-1031	BTA-10K	
R94	1.3Ω	1		ERD-131	
R95	80Ω	10		ERD-130	1 3/4A-80
R96	80Ω	10		ERD-130	1 3/4A-80
R97	7.5Ω	10		ERD-127	
R98	2000Ω	10		ERD-126	1 3/4A-2000
R99	1Meg	½			BTS-1Meg
R100	1Meg	½			BTS-1Meg

Note 1. Some Models may use a 10Meg resistor in this application.
Note 2. Some Models may use a 470KΩ resistor in this application.
Note 3. Some Models may use a 2.2Meg resistor in this application.
Note 4. Some Models may use a 10KΩ resistor in this application.
Note 5. Not used in all Models.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SHERATON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC	6.3VAC			ET-120A	P-8466	P-3074	FO-63 ①	F-16X	
		④.15A	④1.38A							

① Drill one new mounting hole.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SHERATON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	804.3Ω tap ④ 5.3Ω, 20.5Ω 64.3Ω	0Ω	ET-119 ET-119B ①	A-8135 ③ ⑤	HVO-9 ③ ④	TFB-11 ⑤	D-19 ③ ⑤	230T1 ③ ⑤	Horiz. Output Trans.
T3	700Ω	7Ω	ET-116	A-8112	A-3086	TSO-9	A-99X ③		Vert. Output Trans.
T4A	21Ω		EL-173	DY-11A ①	MDF-73	TT-7 ①	T-33		Horiz. Deflection Coils
B	44Ω				MWC-6	TW-7	WC-13 ⑤		Vert. Deflection Coils
T5	6.5Ω		EL-196						Width Coil

① Alternate horiz. output trans.
② Drill one new mounting hole.
③ Connect original terminal #2 to new terminal #4, original #7 and #5 to new #3, original #6 to new #2, original #8 to new #1.
④ Connect original terminal #2 to new terminal #9, original #7 & #5 to new #7, original #6 to new #3, original #8 to new #1.
⑤ Wire as to original circuit.
⑥ Connect original terminal #2 to new terminal #9, connect #7 to #6, then connect original #7 and #5 to new #7 and #8, original #6 to new #3, original #8 to new #1.
⑦ Use original horizontal deflection coil network if necessary.
⑧ Connect to coded blue and green terminals.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SHERATON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	244KΩ	3.4Ω	230Ω	.52Ω	ET-109-1	A-3876	A-2926	RO-303	S-1X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: SHERATON PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3.4Ω	ESP-107A	ST-105 Mod. P6-X	5A1	① 6" PM used on some Models. ② 8" PM used on some Models
				ESP-106 ①	ST-106 Mod. P6-X	6A1	
				ESP-103 ②	ST-115 Mod. P8-V	8A21	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SHERATON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coils	0Ω CT	0Ω					
L2	Fil. Choke	0Ω						
L3	RF, Mixer Grid & Osc. Coils	0Ω						
L4	Fil. Choke	0Ω						
L5	RF Choke	0Ω						
L6	Conv. Plate	.7Ω	.1Ω					
L7	1st. Video IF	.5Ω	.3Ω	EL-197	17-1063		6249	
L8	Fil. Choke	0Ω		EL-174			4604	1.6 Microhenries
L9	2nd. Video IF	.2Ω		EL-162	17-1004	TV-103 ⑧	6189 ⑧	
L10	Fil. Choke	0Ω		EL-174			4604	1.6 Microhenries
L11	3rd. Video IF	.5Ω	.5Ω	EL-161	17-1063		6350	
L12	Fil. Choke	0Ω		EL-174			4604	1.6 Microhenries
L13	4th. Video IF	.4Ω		EL-196				Includes 1N64 Crystal detector & 10MMF Cap.
L14	Fil. Choke	0Ω		EL-174			4604	1.6 Mi crohenries
L15	Series Peaking Coil	2.9Ω		EL-172-A	19-3036	TV-180	6176	30 Microhenries
L16	Shunt Peaking C oil	.1Ω		EL-158	19-3250	TV-185	6181	250 Microhenries

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SHERATON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L17	4.5MC Trap	2Ω		EL-184	20-1004	TV-151	1470	
L18	Series Peaking Coil	15Ω		EL-193A	19-3300 *		4648 *	350 Microhenries, wound on 8.2KΩ resistor
L19	Shunt Peaking Coil	17Ω		EL-194	19-3500	TV-188	6174	500 Microhenries
L20	Sound IF	1.6Ω		EL-196	17-3400	TV-151	1469	
L21	Ratio Det.	5.5Ω	1.8ΩCT	EL-153	17-3497	TV-115	6205	Tertiary Winding -.6Ω
L22	Horiz. Osc.	85Ω		EL-130C	20-1402 †	TV-162 †	6183 †	Tapped @ 60Ω.
L23	Horiz. Stabilizer Coil	80Ω		EL-128				
L24	RF Choke	2.9Ω		EL-172-A	19-3036	TV-180	4626	30 Microhenries

* Parallel with 8.2KΩ resistor
† L22 and L23 replaceable with one unit.
■ Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SHERATON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L25	.240ADC	56Ω	1.62 Hy.	20K-EL-154-■	C-2366 ①	C-2996 ①	TR-1733 ①	C-23X

① Drill one new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	SHERATON PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.240ADC	ESR-100		6Q4	1090A	6S300	300
M2	.240ADC	ESR-100		6Q4	1090A	6S300	300

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SHERATON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG Slo-Blo P/T	1½ Amp. 125 V.			31501.5			

MISCELLANEOUS

ITEM No.	PART NAME	SHERATON PART No.	NOTES
M4	RF Tuner	EFE-111	
M5	Focus Magnet	EL-150	(Includes centering device)
M6	Ion Trap	MIT-100-2	
B3	Trimmer Cap.	ECM-112-1	Horiz. Drive, 20-270MMF

TROUBLE SHOOTING AIDS (cont)

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8, V9 and V10. Check stages of V9 and V10 using audio signal generator, Apply signal across R46.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V9 and V10 especially all bypass and coupling capacitors.

BUZZ

Substitute V8. Check ratio detector alignment and components especially C5, C44 and C45.

DISTORTED

Check by substitution V7, V8, V9 and V10. Check stages of V9 and V10 using audio signal generator and scope. Apply audio signal across R46. Connect scope across secondary of T6.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V10 and V9.

POWER

DEAD SET

If all filaments light check fuse M3. Check M1, M2, C1, C2 and other components associated with the B+ network.
If only V1, V2 and V18 filaments light, check V16 for open filament.
If filaments of V15, V12, V14, V10 and V9 fail to light, check these tubes and R96.
If filaments of V3, V4, V5, V7, V11, V13 and V8 fail to light, check these tubes for open filament. Check, also, R95, L8, L10 and L12.

SMALL AND/OR DIM RASTER

Check B+. If low, check M1, M2 and components that form the B+ filter and decoupling network.

HIGH VOLTAGE

INSUFFICIENT HIGH VOLTAGE

Check by substitution V14, V15, V16 and V17. Check picture tube (V18). Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V14, V15, V16 and V17. Check R94, T2, T4A, picture tube and other associated components.

LOSS OF HIGH VOLTAGE

Check by substitution V14, V15, V16 and V17. Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check R94, C78, C76, T2, T4A and other associated components.	Check C72, C73, C74, C75, L22, L23 and other associated components.

GENERAL

RASTER SOUND NO PICTURE

See "Loss of Video".

RASTER NO SOUND NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check components associated with these stages especially all bypass capacitors and plate load and decoupling networks.

NO RASTER NO SOUND NO PICTURE

See "Dead Set".

TOTAL LOSS OF SYNC

Check by substitution V11 and V12. Check associated circuit components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

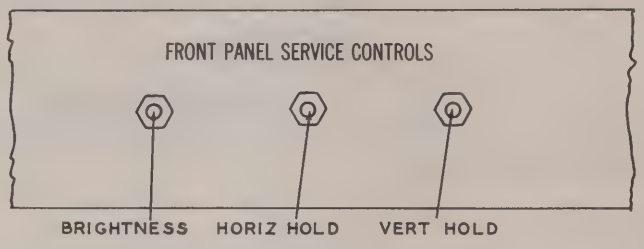
PICTURE TUBE SAFETY GLASS CLEANING

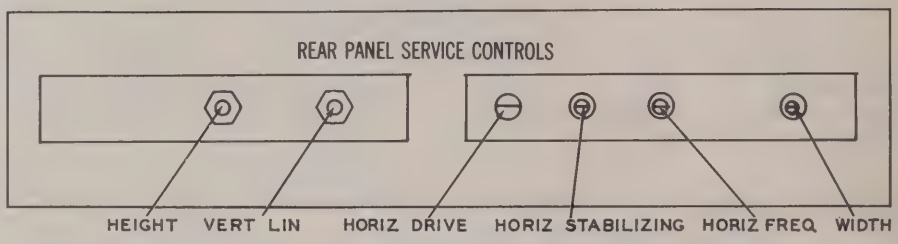
For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L22) and horizontal stabilizing slug (L23) until the picture synchronizes horizontally.

SOUND IF DETECTOR

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L21) located on top of chassis. (See tube placement chart).

FUSES

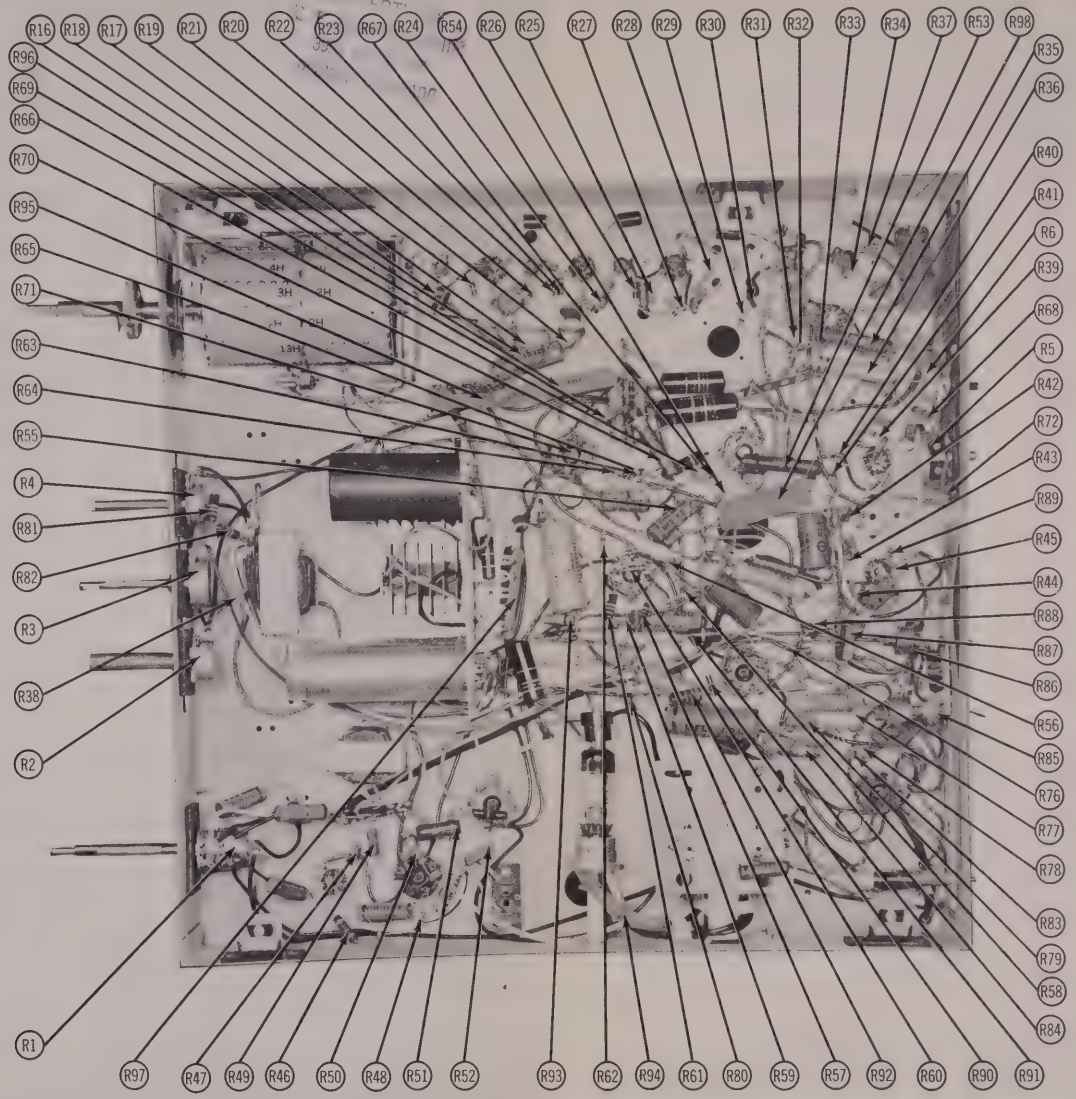
One fuse is used for LV power supply protection. (See tube placement chart for location).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Disconnect built-in antenna and transmission line.
3. Remove 8 wood screws. Remove rear cover.
4. Disconnect speaker. Remove 4 speaker nuts. Remove speaker (Not necessary for chassis removal.).
5. Remove 4 chassis bolts. Remove chassis.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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MODEL 3170C (Ch. 528.249, -1)

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SILVERTONE
MODEL 3170C (Ch. 528.249, -1)

TRADE NAME	Silvertone Model 3170C (Ch. 528.249, -1)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave, Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 2 thru 13, Video IF 26.25MC, Sound IF 21.75MC (Intercarrier)

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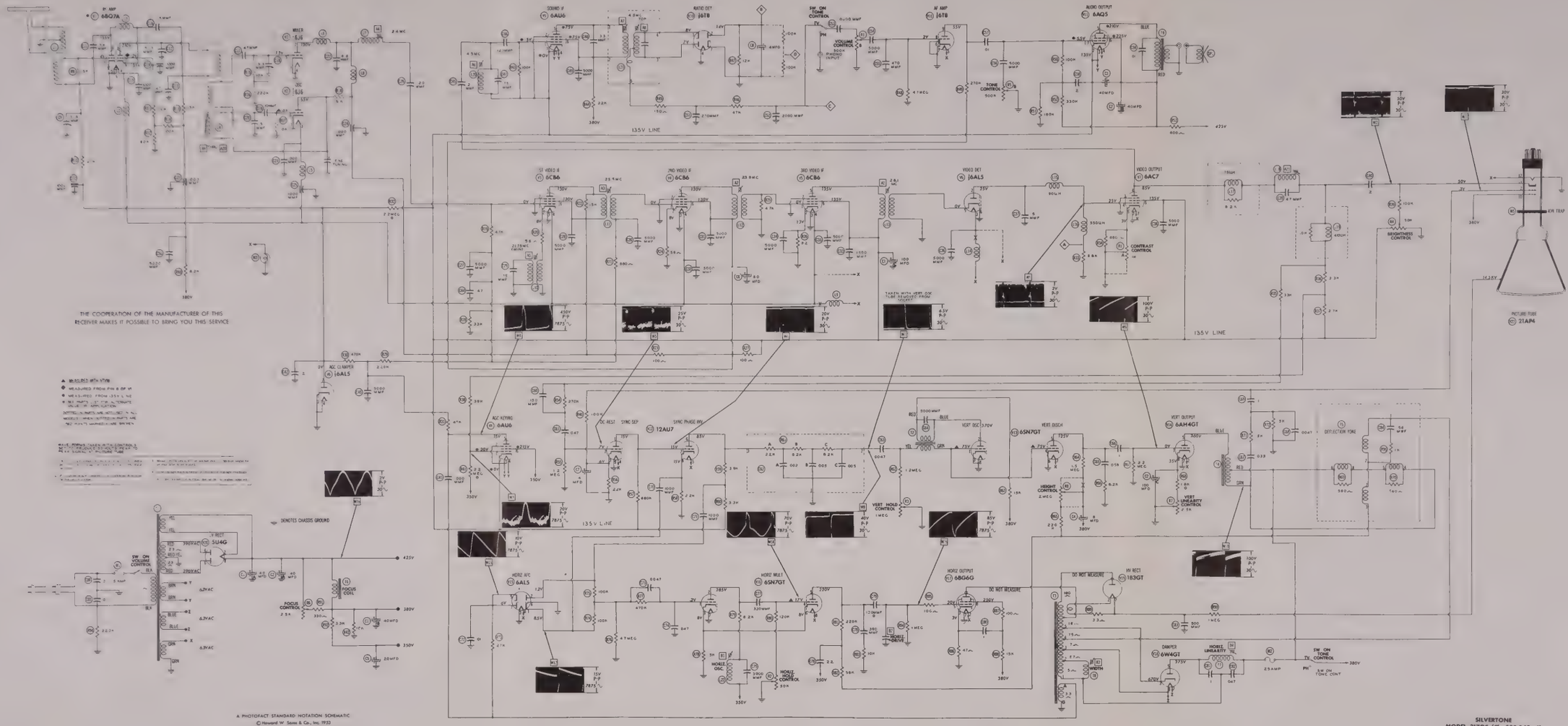
DATE 10 – 53 SET 218 FOLDER 11


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
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SILVERTONE
MODEL 3170C (Ch. 528.249, -1)
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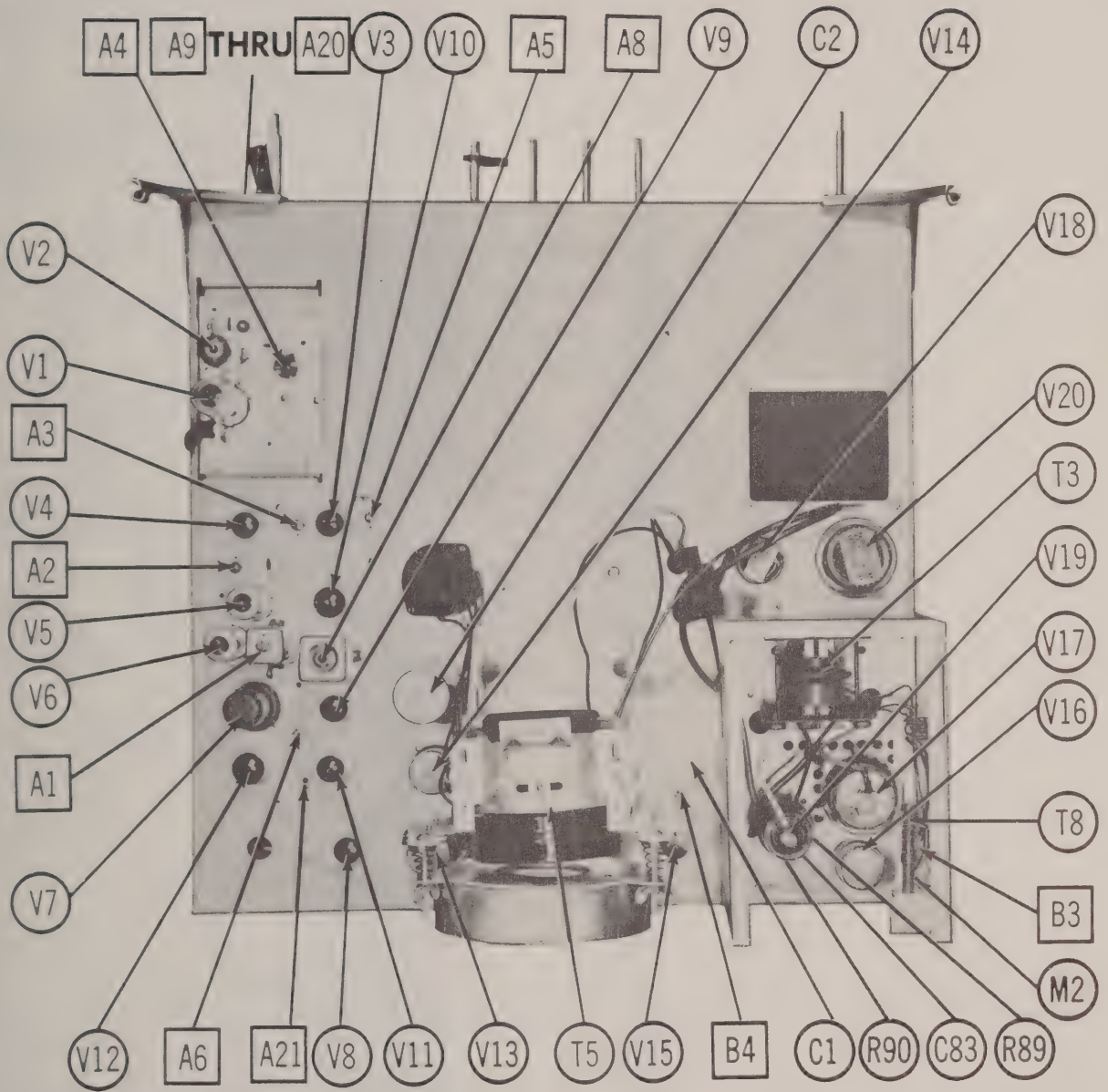
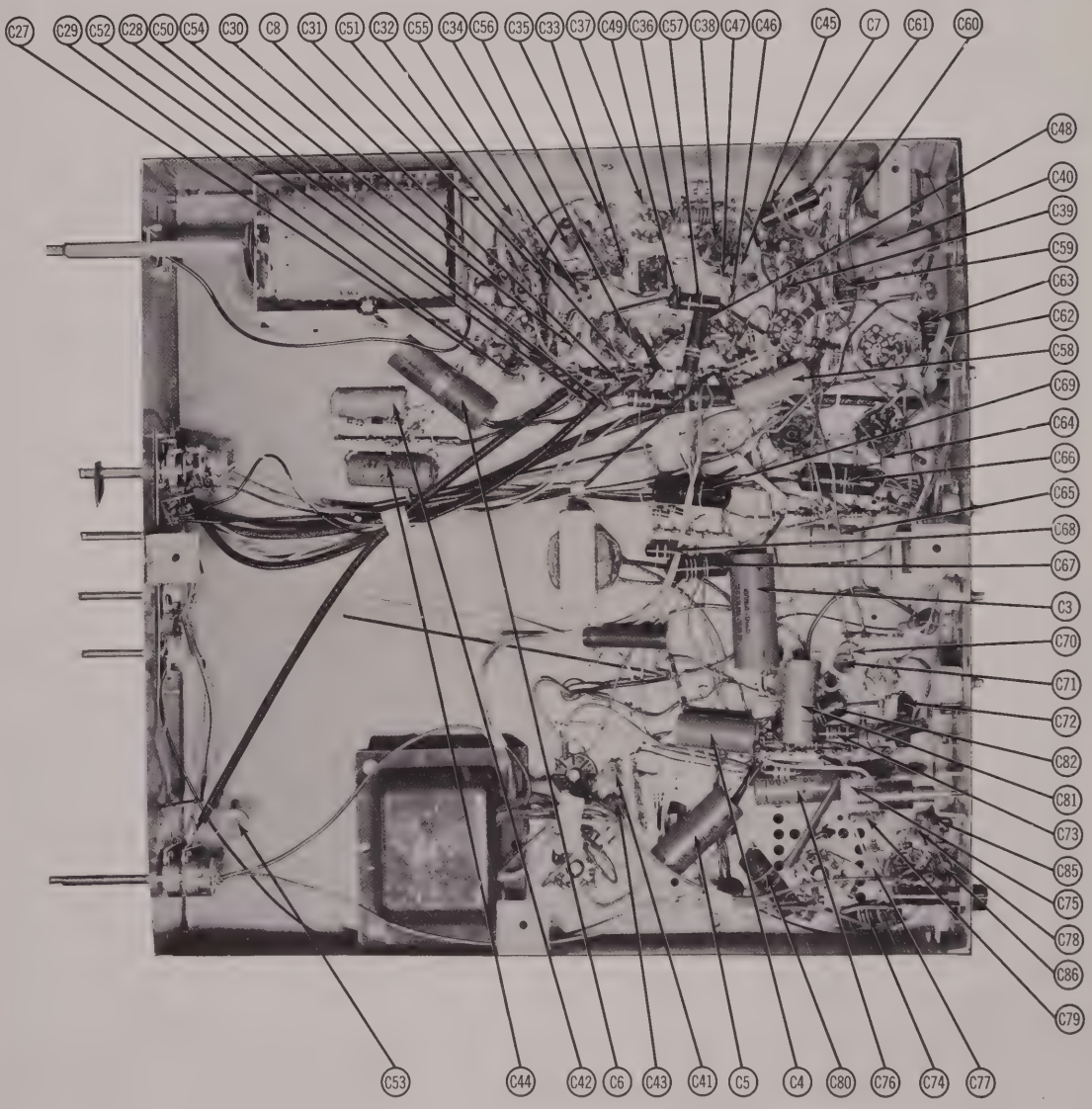


CHASSIS TOP VIEW

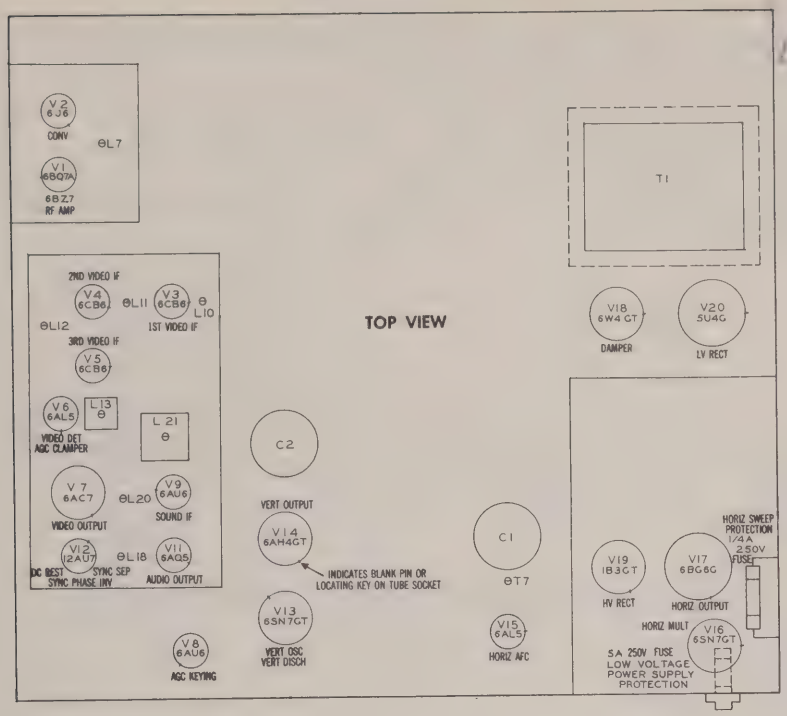


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

MODEL 3170C (Ch. 528.249, -1)

SILVERTONE

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V20, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7, V11
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V21
Has pic, no sound - V9, V10, V11
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V12, V13, V14
No horiz. sync - V12, V15, V16
No vert. or horiz. sync - V12

SWEEP FAILURE
No raster, has sound - V16, V17, V18, V19, V21, Fuse (M2)
No vertical deflection - V13, V14
Poor vert. linearity or foldover - V13, V14
Poor horiz. linearity or foldover - V16, V17, V18
Narrow picture - V16, V17, V18, V19, V20
Vert. off freq. - V12, V13, V14
Horiz. off freq. - V12, V15, V16

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.
Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	26.1MC (Unmod.)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	23.8MC	"	"	A2	"
3.	"	"	25.5MC	"	"	A3	"
4.	"	"	24.0MC	"	"	A4	"
5.	"	"	21.75MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.75MC 26.25MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary, retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point B to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (C). Common to point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor (C8). Adjust for maximum amplitude and symmetry as in Fig. 2.
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A8	Reconnect stabilizer capacitor (C8). Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

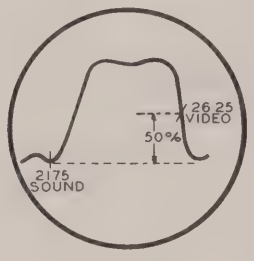


FIG. 1

FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A9	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A15	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A16	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A17	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A18	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A19	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A20	

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

4.5MC TRAP ALIGNMENT

Tune in a TV station and examine picture for evidence of 4.5MC interference. If any is noted adjust A21 to minimize it.

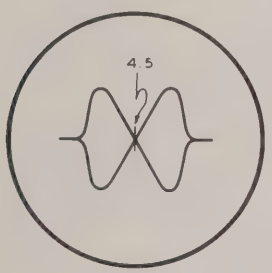


FIG. 3

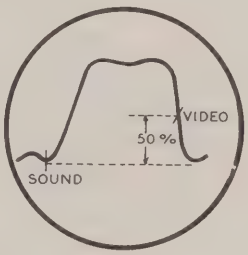
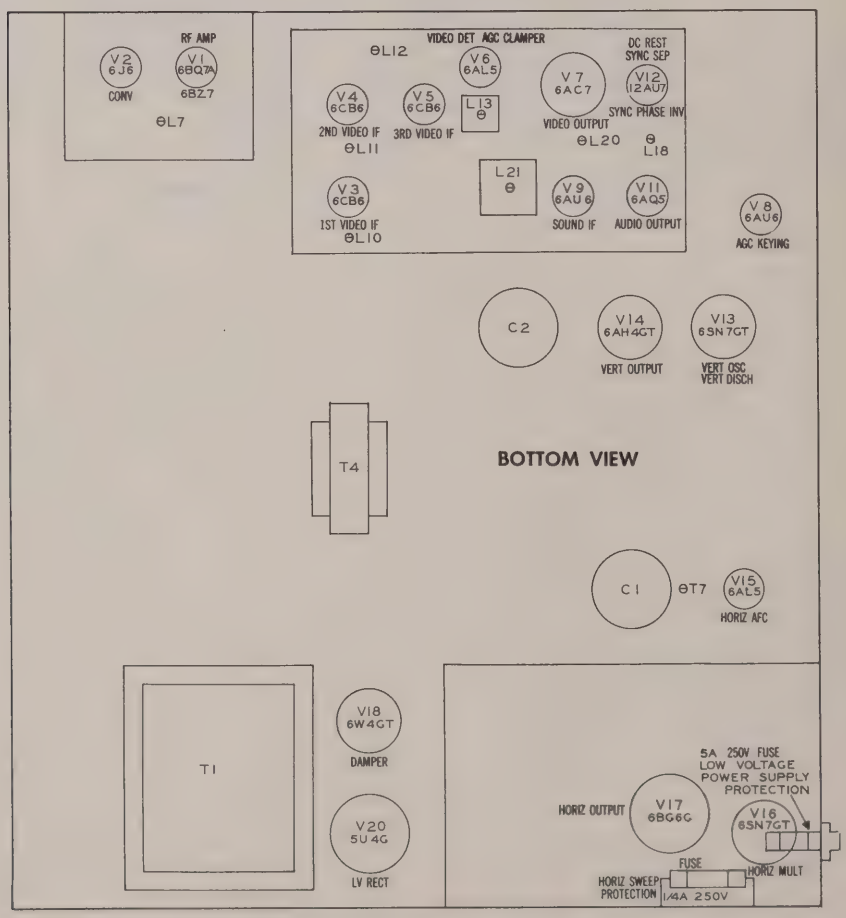


FIG. 4

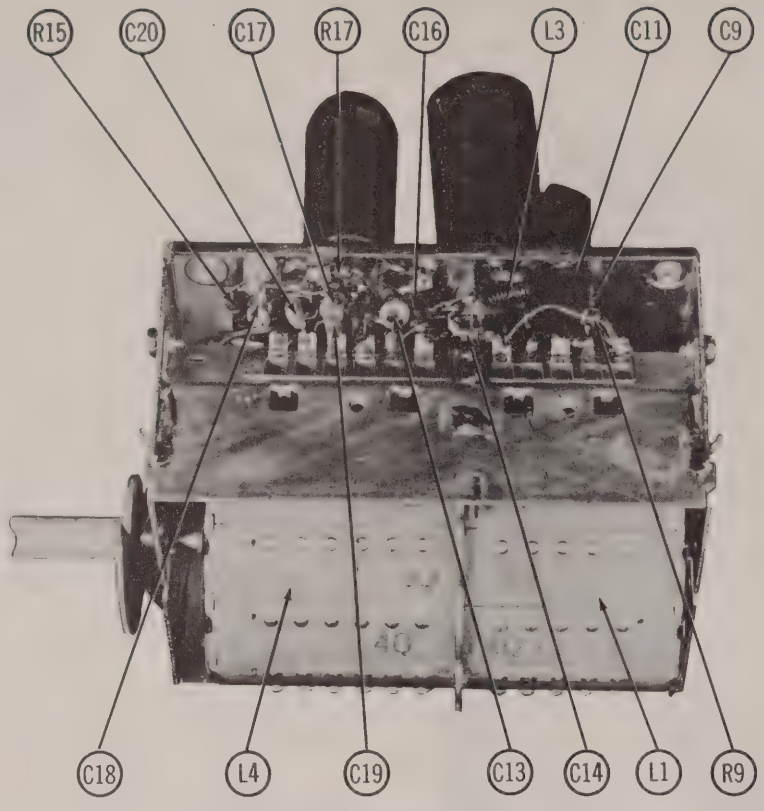
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	590KΩ	0Ω	.1Ω	0Ω	† 10KΩ	† 165KΩ	INF	0Ω
V 2	6J6	‡ 15KΩ	‡ 200Ω	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	38KΩ	56Ω	0Ω	.1Ω	‡ 200Ω	‡ 200Ω	0Ω		
V 4	6CB6	34KΩ	56Ω	0Ω	.1Ω	‡ 100Ω	‡ 100Ω	0Ω		
V 5	6CB6	.3Ω	82Ω	0Ω	.1Ω	‡ 0Ω	‡ 0Ω	0Ω		
V 6	6AL5	0Ω	6.8KΩ	.1Ω	0Ω	.2Ω	INF	540KΩ		
V 7	6AC7	0Ω	0Ω	0Ω	6.8KΩ	24Ω	‡ 0Ω	.1Ω	‡ 6KΩ	
V 8	6AU6	‡ 41KΩ	‡ 0Ω	‡ 0Ω	‡ .2Ω	300KΩ	† 3.6KΩ	‡ 0Ω		
V 9	6AU6	‡ 100KΩ	‡ 0Ω	‡ 0Ω	‡ .2Ω	†22KΩ	†22KΩ	‡ 0Ω		
V 10	6T8	INF	12KΩ	INF	0Ω	.1Ω	0Ω	0Ω	4.7 Meg	‡270KΩ
V 11	6AQ5	220KΩ	30KΩ	‡ 0Ω	‡ .2Ω	† 1.3KΩ	†1.1KΩ	220KΩ		
V 12	12AU7	‡ 680KΩ	1.2 Meg	22KΩ	.1Ω	.1Ω	‡ 7.2KΩ	‡ 680KΩ	2.2KΩ	0Ω
V 13	6SN7GT	1.7 Meg	† 16KΩ	0Ω	1.7 Meg	■ 2.5 Meg	0Ω	.1Ω	0Ω	
V 14	6AH4GT	2.2 Meg	.1Ω	INF	INF	† 1.4KΩ	INF	0Ω	2.3KΩ	
V 15	6AL5	4.8 Meg	4.8 Meg	0Ω	.1Ω	27KΩ	0Ω	27KΩ		
V 16	6SN7GT	5.2 Meg	† 12KΩ	1.5KΩ	140KΩ	■ 275KΩ	1.5KΩ	0Ω	.1Ω	
V 17	6BG6G	†15KΩ	.1Ω	47Ω	† 15KΩ	1 Meg	1 Meg	0Ω	† 15KΩ	TOP CAP ■ 16Ω
V 18	6W4GT	INF	INF	INF	■ 7.5Ω	†300Ω	INF	■ 15Ω	■15Ω	
V 19	1B3GT	PINS 1 thru 8 HAVE INF RESISTANCE								TOP CAP ■ 405Ω
V 20	5U4G	INF	10KΩ	INF	25Ω	INF	23Ω	INF	10KΩ	
V 21	21AP4	0Ω	120KΩ	Pin 10 † 290Ω	Pin 11 ‡ 120KΩ	Pin 12 .1Ω				

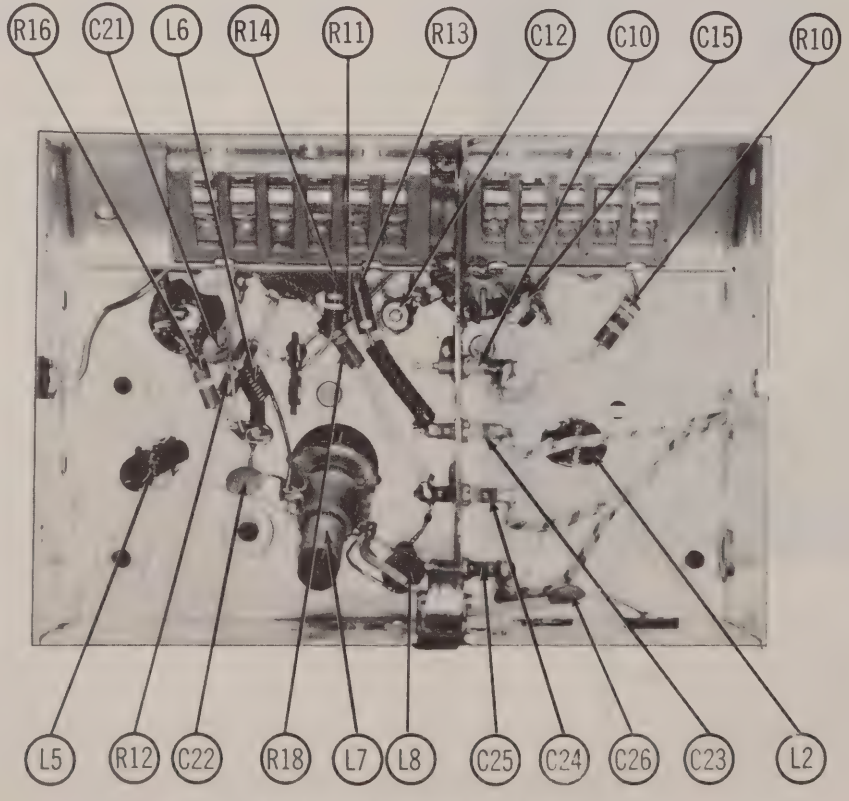
† MEASURED FROM PIN 8 OF V20
‡ MEASURED FROM 140 VDC LINE
■ MEASURED FROM PIN 3 OF V18



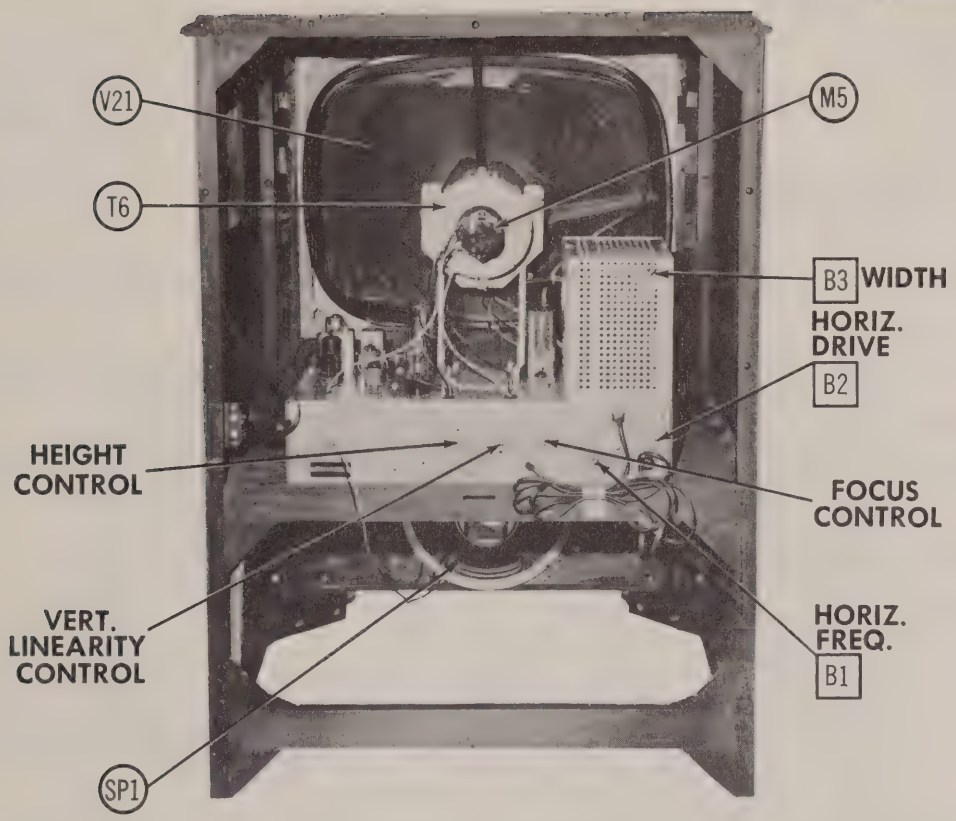
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at mid-range and adjust horizontal oscillator slug (B1) until the picture synchronizes horizontally. Make slight readjustments of (B1) if necessary for best overall sync on all channels.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust width slug (B3) for a picture slightly wider than is necessary to fill the mask horizontally.

Adjust horizontal linearity control (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18 and V20. Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check C80, C81, C82, R88, R87, R86, T3, T5A, T7, T8 and other associated circuit components.	Check C78, C79, R81, R82, R84, horiz. drive trimmer (B2), and other associated circuit components.

DRIVE LINES

Check by substitution V16, V17 and V18. Check adjustment of horizontal drive trimmer (B2). Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check T3, T5A, C81, C82, T7, T8 and other associated circuit components.	Check components associated with V16 and V17.

COMPRESSED LEFT SIDE

Check by substitution V16, V17 and V18. Check adjustment of width (B3) and horizontal linearity (B4). Check T3, T5A, T7, T8, C81, C82, C80 and other associated components.

FOLDS

Check by substitution V16, V17 and V18. Check C80, C81, C82, R88, R87, R86, T3, T5A, T7, T8 and other associated components.

XMAS TREE EFFECT

Substitute V16 . Check L22 for shorted turns. Check C75 and C77.

VERTICAL

LOSS OF SWEEP

Check by substitution V13 and V14. Check waveform at W9.

If Satisfactory	If Unsatisfactory
Check T4, T5B, R68, R7, C2C and other associated circuit components.	Check C63, C64, C65, C66, R8, R64, R65, R66 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V13, V14 and V20. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V13 and V14. Check C2C, T4, T5B and other associated components.

COMPRESSED AT TOP

Check by substituion V13 and V14. Check C63, C64 and other associated components.

FOLDS

Check by substitution V13 and V14. Check C63, C64, T2, T4, T5B and other components associated with V13 and V14.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V15 and V16. Check setting of horizontal hold control. Check adjustment of horizontal frequency (B1). Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check C70, C71, C73 and other associated components.	Check C72, R73, T3 and other associated components.

CRITICAL HOLD

Check by substitution V12, V15 and V16. Proceed as outlined under "Loss of Sync".

PULLING PICTURE

Check by substitution V15, V16, V17 and V12. Check horizontal AFC network. Check video IF, amplifier and detector stages for 60 cycle modulation due to heater to cathode leakage. Check signal at W5 for sync compression and/or signal overload.

VERTICAL

LOSS OF SYNC

Check by substitution V12 and V13. Check waveform at W7.

If Satisfactory	If Unsatisfactory
Check C63, R3, T2 and other associated components.	Check vertical integrator network and other components associated with V12.

CRITICAL HOLD

Check by substitution V12 and V13. Proceed as outlined under "Loss of Sync".

TRIGGERING

Check by substitution V12, V13 and V14. Check to see that all filament leads are dressed away from the grid lead of these stages.

VIDEO

LOSS OF VIDEO

Check C40, R4, R39, picture tube (V21), and other associated components.

SOUND BARS

Check adjustment of fine tuning and local oscillator. Check 4.5MC trap adjustment (A21).

POOR RESOLUTION

Substitute V7. Check all bypass and coupling capacitors associated with V7. Check video IF alignment. Check components associated with the video IF strip.

POOR CONTRAST

Check by substitution V6 and V7. Check components associated with these stages. Check picture tube.

NEGATIVE PICTURE

Check by substitution V8, V7 and V6. Check components associated with these stages.

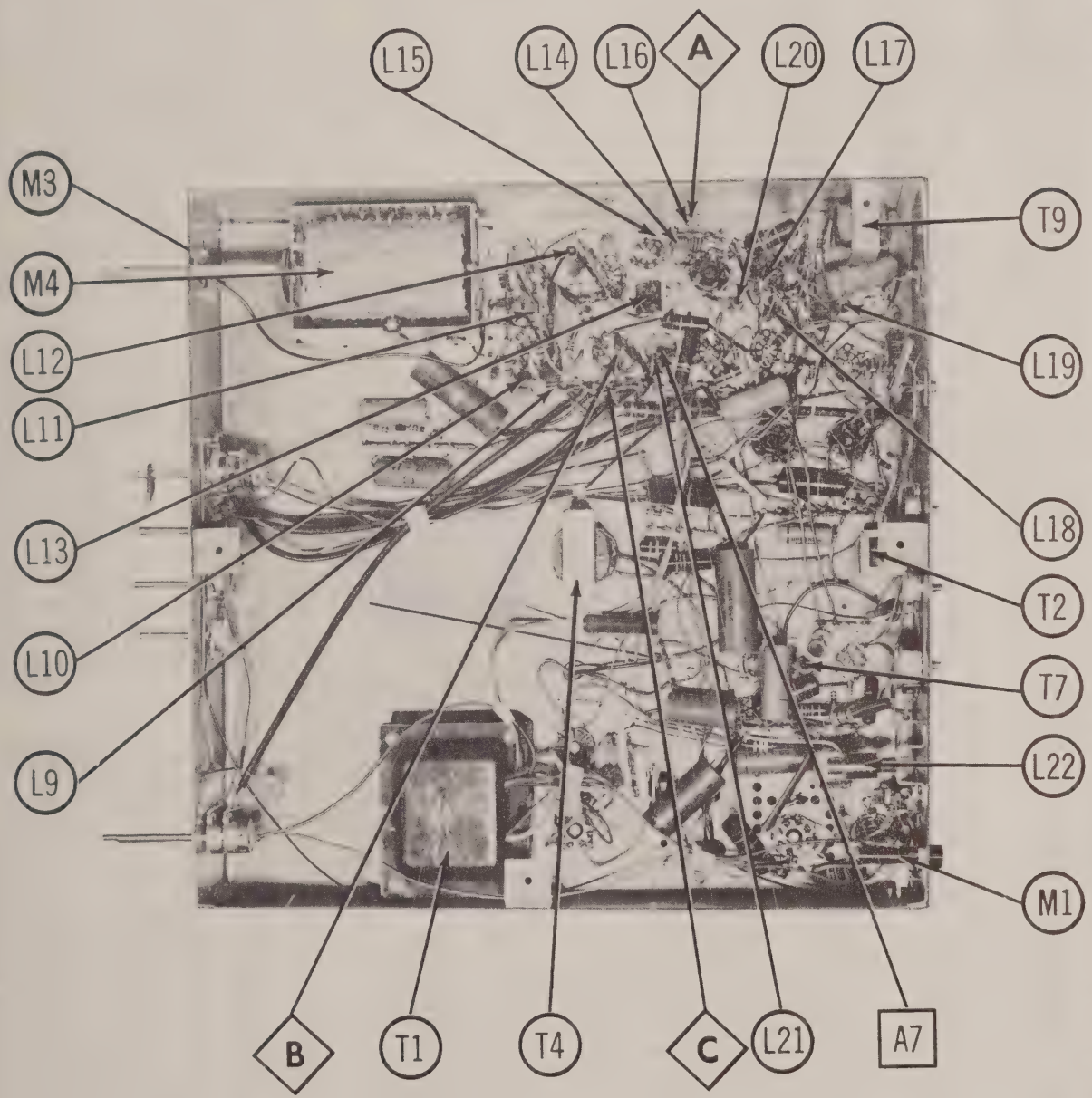
SMEAR

Check by substitution V6 and V7. Check L17 and L19 for open. Check C40 for leaky. Check R35, R36, R37, and R34 for change of value. Check picture tube and other associated components.

ONE WIDE BLACK BAR ACROSS PICTURE

Check tuner, video IF, video detector and video amplifier tubes for heater to cathode leakage.

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7A	6BQ7A	9AJ	
B	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6J8	6J8	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector- AGC Clamper	6AL5	6AL5	6BT	
V7	Video Output	6AC7	6AC7	8N	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector- AF Amplifier	6T8	6T8	9E	
V11	Audio Output	6AQ5	6AQ5	7BZ	
V12	DC Restorer - Sync Separator- Sync Phase Inv.	12AU7	12AU7	9A	
V13	Vert. Oscillator - Vert. Discharge	6SN7GT	6SN7GT	8BD	
V14	Vert. Output	6AH4GT	6AH4GT	8EL	
V15	Horiz. AFC	6AL5	6AL5	6BT	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BG6G	6BG6G	5BT	
V18	Damper	6W4GT	6W4GT	4CQ	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: GENERAL ELECTRIC PART No.	RTMA BASE TYPE	NOTES
V21	21AP4	21AP4	21AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	T16-295	AFH3-159		C118		FP375	TVL-3764	
B	▲40	450								
C	▲100	200								
C2A	▲40	450	T18-295	AFH3-159		C118		FP375	TVL-3764	
B	▲40	450								
C	▲100	200								
C3	40	400	T18-308	PR3450/40		BR4045A		TC78	TVA-1712	
C4	8	500	T18-296	PR3500/8		BR850A		TC81	TVA-1902	
C5	20	450	T18-276	PR3450/20		BR2045A		TC75	TVA-1709	
C6	60	200	T18-302	PR3450/50		BR6025		TC90	TVA-1713	
C7	4	50	T18-282	PR3150/4		BR415		TC30	TVA-1402	
C8	4	60	T18-292	PR3150/4		BR415		TC30	TVA-1402	
C9	3-8				829-3					
C10	1000			CN-1-001	MFT-1000				503C-D1	
C11	3.6				829-3				C7585A	
C12	.5-3				D6-470		GP1K-470		UC-5447	5GA-Q47
C13	47		BPD-000047		D6-470					503C-D1
C14	1000			CN-1-001	MFT-1000					503C-D1
C15	1000		BPD-001	DD-102		TM5D1	801-001	DC-521	58K-D1	
C16	1.8		SIL.SNP0	TCZ-1.8			NP0K-1R5	ZT-5515	5TCCB-V15	
C17	47		BPD-000047	D6-470			GP1K-470	UC-5447	5GA-Q47	
C18	.5-3			829-3				C7585A		
C19	10		SIMN750	TCN-10				M750K-100	NT-541	5TCU-Q1
C20	5		SISNP0	TCZ-4.7				NP0K-050	ZT-555	5TCCB-V47
C21	1000		BPD-001	DD-102		TM5D1	801-001	DC-521	58K-D1	
C22	6.8		SIL.SNP0	TCZ-6.8				NP0K-6R8	ZT-5568	5TCCB-V68
C23	1000		CN-1-001	MFT-1000						503C-D1
C24	1000		CN-1-001	MFT-1000						503C-D1
C25	1000		CN-1-001	MFT-1000						503C-D1
C26	120		BPD-00012	D6-121		TM5T12	GP3K-121		UC-5312	5GA-T12
C27	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C28	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C29	75	500			TCZ-75					
C30	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C31	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C32	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C33	1500		T16-241	BPD-005	DD-152	TM5D15	801-0015		DC-5215	58K-D15
C34	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C35	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C36	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C37	5		T15-223	SISNP0	TCZ-4.7		NP0K-050		ZT-555	5TCCB-V47
C38	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C39	47			SI47NP0	TCZ-47		NP0K-470		ZT-5447	5TCC-Q47
C40	.2	600	T16-212	484-2					TP419	
C41	1000		T15-220	BPD-001	DD-102	TM5D1	801-001		DC-521	58K-D1
C42	.2	400	T16-188	484-2		PTE4P23			TP419	4TM-P22
C43	1000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C44	.47	200	T16-240	P288-47		PJ3P5			PT405	2TM-P47
C45	2			SI20	D6-121	TM5T12	GP2K-121		UC-5312	5GA-T12
C46	120			SI75N750	TCN-75				N750L-750	5TCU-Q75
C47	75			SI3.3NP0	TCZ-3.3		NP0K-3R3		ZT-5533	5TCCB-V33
C48	3.3		T15-236	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C49	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C50	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C51	270		T15-242	SI270	D6-271		GP2K-271		UC-5327	5GA-T27
C52	2000		T15-228	BPD-002	DD-202	TM5D2	801-002		DC-522	58K-D2
C53	10000		T15-211	BPD-01	DD-103	TM5S1	811-01		DC-511	58K-S1
C54	5000		T16-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C55	470	500	T15-200	1488-0005	D6-501	5WT5	GP2K-501		MC245	1FM-35
C56	5000		T16-177	BPD-005	DD-502	TM5D5	811-005		DC-525	58K-D5
C57	.01	600	T16-237	P688-01	D6-103	PTE6R1	GP2-333-103		PT611	6TM-S1

Note 1. Chassis 528.249 uses 220MMF in this application (Part#T15-230).
Note 2. Chassis 528.249 uses 180MMF in this application (part #T15-236).
◆ Items C62A, C62B, C62C, R61A, R61B, R61C are combined in one unit.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C58	.3	400	T16-188	484-3			PTE4P22		TP439	
C59	.01	600	T16-237	P688-01	D6-103		PTE6R1	GP2-333-103	PT611	6TM-S1
C60	150	500	T15-235	1468-00015	D6-151		SW5T15	GP2K-151	MC236	1FM-315
C61	.047	600		P688-047	D7-503		PTE5S47		PT6147	6TM-S47
C62A	.002		{ P688-002		◆PC-109		{ PTE6D2		{ PT622	
B	.005		{ P688-005				{ PTE6D5	◆1405-01	{ PT625	◆101C1
C	.005		{ P688-005				{ PTE6D5		{ PT625	
C63	.0047	600	T16-233				PTE6P1		PT601	6TM-P1
C64	5000		T15-177	BPD-005	MD-502	TM5D5	811-005		DC-525	58K-D5
C65	.056	600	T15-236							
C66	.1	600	T16-238	P688-1	D7-104		PTE6P1		PT601	6TM-P1
C67	.033	600	T16-234	P688-033			PTE6S33		PT6133	6TM-S33
C68	.0047	600	T16-233	P688-0047	D6-472		PTE5D47	GP2-333-472	PT6247	6TM-D47
C69	.1	600	T16-238	P688-1	D7-104		PTE6P1		PT601	6TM-P1
C70	1000		T15-220	BPD-001	DD-102		TM5D1	801-001	DC-521	58K-D1
C71	1000		T15-220	BPD-001	DD-102		TM5D1	801-001	DC-521	58K-D1
C72	.01	600	T16-237	P688-01	D6-103		PTE6R1	GP2-333-103	PT611	6TM-S1
C73	.0047	600	T16-233	P688-0047	D6-472		PTE6D47	GP2-333-472	PT6247	6TM-D47
C74	.047	600		P688-047	D7-503		PTE5S47		PT6147	6TM-S47
C75	3900	500		1464-004			1DR5D4		MCB463	MB-34
C76	.22	600	T16-318	484-25			PTE6P25		PT6025	6TM-P25
C77	330	600	T15-226							
C78	390	500	T15-231	1469-0004			5R5T4		MCB343	MB-34
C79	120		T15-232	SI120	D6-121		TM5T12	GP2K-121	UC-5312	5GA-T12
C80	.1	600	T16-238	P688-1	D7-104		PTE6P1		PT601	6TM-P1
C81	.1	1000	T16-231	P1088-1			PTE6P1		PT601	MB-P1
C82	.047	1000	T16-239	P1088-047			PTE16S47		PT6147	MB-S47
C83	500	30000	T15-239	HV30C	TV3-502		MM-C30T5	413-501	HV20035A	30DK-T5
C84	56	3000								
C85	.01	600	T16-237	689ZK-01			PJ6R1		PT611	6TM-S1
C86	.01	600	T16-237	689ZK-01			PJ6R1		PT611	6TM-S1

Note 1. Chassis 528.249 uses 220MMF in this application (Part#T15-230).
Note 2. Chassis 528.249 uses 180MMF in this application (part #T15-236).
◆ Items C62A, C62B, C62C, R61A, R61B, R61C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω	½	T24-203	QJ-490 *			UF31, UR55A	Contrast-Panel
B	500KΩ	½		Not Req.			UR55A	Volume-rear
C	Switch						US-26	Attach to R1B
R2A	50KΩ	½	T25-25	QU-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	1Meg	½	T25-22	QU-137	AG-61-S	AB-69	U- 54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach To R3A
R4A	50KΩ	½	T25-21	QU-123	AG-44-S	AB-31	U-35	Phase Switch
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5A	Switch		T25-23					Phase Switch
B	500KΩ	½	Not Req.	QU-133	AG-58-S	AB-59	SU-50	Tone
C	Shaft		Not Req.	RQ	FK5-1/4	AK-1	Not Req.	Attach to R5B
R6A	2500Ω	2	T25-14	WK-2500	A43-2500	VK-132	R2500L	Focus- wire wound
B	Shaft		Not Req.	Not Req.	FK5-1/4	AK-1	Not Req.	Attach to R6A
R7A	2500Ω	½	T25-13	QU-112	AG-15-S	AB-7	SU-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FK5-1/4	AK-1	Not Req.	Attach to R7A
R8A	3Meg	½	T25-15	QU-139	AG-83-S	AB-75	SU-56	Height
B	Shaft		Not Req.	Not Req.	FK5-1/4	AK-1	Not Req.	Attach to R8A

* CONCENTRIKIT EQUIVALENT - KIT K-2 BASE ELEMENTS & SHAFTS B11-108 & P1-206 (Panel)
B13-133 & R2-222 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	NOTES
R9	15KΩ	½			
R10	47KΩ	½			
R11	100KΩ	½			
R12	180KΩ	½			
R13	1500Ω	½		BTS-1500	
R14	100KΩ	½		BTS-100K	
R15	10KΩ	½		BTS-10K	
R16	220KΩ	½		BTS-220K	
R17	10KΩ	½		BTS-10K	
R18	15KΩ	½		BTS-15K	
R19	4700Ω	½	T60-759	BTS-4700	
R20	56Ω	½	T60-806	BTS-56	
R21	680Ω	½	T60-708	BTS-680	
R22	15KΩ	½	T60-783		
R23	100Ω	½	T60-752	BTS-100	
R24	56Ω	½	T60-806	BTS-56	
R25	4700Ω	½	T60-759	BTS-4700	
R26	82Ω	½	T60-776	BTS-82	
R27	100Ω	½	T60-752	BTS-100	
R28	33KΩ	½	T60-748	BTS-33K	
R29	220KΩ	½	T60-798	BTS-220K	
R30	470KΩ	½	T60-721	BTS-470K	
R31	47KΩ	½	T60-730	BTS-47K	
R32	2.2Meg	½	T60-826	BTS-2.2Meg	Note 1
R33	6800Ω	½	T60-788	BTS-6800	
R34	680Ω	½	T60-708	BTS-680	
R35	33KΩ	½	T60-748	BTS-33K	
R36	3300Ω	1	T60-724	BTA-3300	
R37	2700Ω	1	T60-892	BTA-2700	
R38	39KΩ 5%	½	T60-893	BTS-39K 5%	
R39	100KΩ	½	T60-801	BTS-100K	
R40	100KΩ	½	T60-801	BTS-100K	
R41	2.2Meg	½	T60-826	BTS-2.2Meg	Note 3
R42	10KΩ	20	T60-897	2D-10K	
R43	100KΩ	½	T60-727		
R44	22KΩ	2	T60-810		
R45	150Ω	½	T60-767	BTS-150	
R46	47KΩ	½	T60-730	BTS-47K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	NOTES
R47	12KΩ	½	T60-811	BTS-12K	
R48	4.7Meg	½	T60-779	BTS-4.7Meg	
R49	270KΩ	½	T60-747	BTS-270K	
R50	100KΩ	½	T60-801	BTS-100K	
R51	180KΩ 5%	½	T60-788	BTS-180K 5%	
R52	330KΩ 5%	½	T60-787	BTS-330K 5%	
R53	800Ω	5	T60-800	1 3/4A-800	
R54	270KΩ	½	T60-747	BTS-270K	
R55	1.2Meg	½	T60-782	BTS-1.2Meg	
R56	22KΩ	½	T60-744	BTS-22K	
R57	680KΩ	½	T60-807	BTS-680K	
R58	2200Ω	½	T60-714	BTS-2200	
R59	3900Ω	½	T60-710	BTS-3900	
R60	3300Ω	½	T60-882	BTS-3300	
R61A	22KΩ	½		BTS-22K	
B	8200Ω	½	◆T17-106	BTS-8200	
C	8200Ω	½		BTS-8200	
R62	1.2Meg	½	T60-782	BTS-1.2Meg	
R63	15KΩ	½	T60-783	BTS-15K	
R64	1.5Meg	½	T60-880	BTS-1.5Meg	
R65	220KΩ	½	T60-672	BTS-220K	
R66	8200Ω	½	T60-778	BTS-8200	
R67	2.2Meg	½	T60-726	BTS-2.2Meg	
R68	1800Ω	1	T60-899	BTA-1800	Note 2
R69	560Ω	½		BTS-560	
R70	560Ω	½		BTS-560	
R71	15KΩ	½	T60-783	BTS-15K	
R72	15KΩ	½	T60-783	BTS-15K	
R73	27KΩ	2	T60-888	BTS-27K	
R74	100KΩ	½	T60-801	BTS-100K	
R75	100KΩ	½	T60-801	BTS-100K	
R76	4.7Meg	½	T60-779	BTS-4.7Meg	
R77	470KΩ	½	T60-731	BTS-470K	
R78	1500Ω	½	T60-729	BTS-1500	
R79	8200Ω	½	T60-778	BTS-8200	
R80	120KΩ	½	T60-817	BTS-120K	
R81	220KΩ	1	T60-886	BTA-220K	
R82	56KΩ	½	T60-802	BTS-56K	

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	NOTES
R83	10KΩ	½	T60-780	BTS-10K	
R84	1Meg	½	T60-668	BTS-1Meg	
R85	100Ω	½	T60-752		
R86	47Ω	1	T60-805	BW-1-47	
R87	100Ω	½	T60-752		
R88	15KΩ	½	T60-804	1 3/4A-15K	
R89	3.3Ω	½	T60-884		

Note 1. Ch. 528.249 uses a 3.3Meg resistor in this application.
Note 2. Ch. 528.249 uses a 1000Ω resistor in this application.
Note 3. Not used in chassis 528.249.

◆ Items R61A, R61B, R61C, C62A, C62B, C63C are combined in one unit.

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Silvertone PART No	IRC PART No	NOTES
R90	1Meg	1	T60-877		
R91	330Ω	3	T60-814	BTB-330	
R92	3300Ω	2	T60-816	BTB-3300	
R93	8200Ω	2	T60-878	BTB-8200	
R94	220KΩ	½	T60-667	BTS-220K	
R95	1000Ω	1		BTB-1000	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC @ 2A	720VCT .250ADC	5VAC ② 3A	6.3VAC ③ .99A	80-264					
			SEC. 4 ④ 1.5A	SEC. 5 ⑤ 6.3VAC ⑥1.15A						

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	170Ω	940Ω	T80-257	A-8125①	A-3003 ①	TBO-5 ①	A-97X ①	208T2 ② 222T1 ③④	Vert. Osc. Trans. Horiz. Output Trans.
T3	4385Ω tap ②.5Ω, 7.2Ω, 16.2Ω, 31.7Ω, 37.7Ω	3.3Ω SEC. 3 0Ω	T80-378						
T4	1100Ω tap ③11.5Ω		T80-277	A-8123	A-3037	TSO-8④	A-102X	222T1	Vert. Output Trans.
T5A	18.4Ω		T83-743	DY-9A ⑤	MDF-72	TY-3 ④	Y-17	21LD2	Horiz. Deflection Coils
B	47Ω								Vert. Deflection Coils
T6	430Ω		T10-560	FC-11	MF-2	TC-3④	B-470-R		Focus Coil
T7	14.2Ω		T10-582		MWC-8	TW-7	WC-13④	21MR1	Horiz. Lin. Coil
T8	.6Ω		T10-551	WC-1		TW-1		20MR1	Width Coil

① Drill one new mounting hole.
② Connect as auto trans.
③ Use original horiz. deflection coil network if necessary.
④ Use original deflection coil network.
⑤ Fabricate new mounting bracket.
⑥ Connect to coded blue and green terminals.
⑦ Mount on top of chassis.
⑧ See instruction sheet packed with unit for terminal connections.
⑨ Use with width coil 20MR1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T9	5.4KΩ	3.3Ω	260Ω	.44Ω	80-253	A-3849	A-3019	RO-9 ①	S-5X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.3Ω	79-406	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	MEISSNER PART No	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coils	0Ω CT	0Ω					
L2	Fil. Choke	0Ω						
L3	Neutr.Coil	0Ω						
L4	RF, Mixer Grid & Osc. Coils	0Ω						
L5	Fil. Choke	0Ω						
L6	RF Choke	1Ω						
L7	1st. Video IF	1.3Ω						
L8	RF Choke	1.3Ω						
L9	Fil. Choke	0Ω						Not used in all Models.
L10	Sound Trap	0Ω	0Ω	T10-574	20-1021	TV-150 *	6193 *	Silvertone part number includes C39
L11	2nd.Video IF	.3Ω	.3Ω	T10-541	17-1062		6250	
L12	3rd.Video IF	.3Ω	.3Ω	T10-542	17-1063		6249	
L13	4th.Video IF	.2Ω	.2Ω	T10-577				
L14	Fil. Choke							Not used in all Models.
L15	Series Peaking Coil	6Ω		T10-557	19-3093	TV-181	6177	90 Microhenries
L16	Shunt Peaking Coil	12Ω		T10-579	19-3500	TV-188	6174	550 Microhenries
L17	Series Peaking Coil	6Ω		T10-580	19-3180 ■	TV-184 ■	6180 ■	175 Microhenries, wound on 8.2KΩ resistor

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L18	4.5MC Trap	3.1Ω		T10-581	20-1004	TV-151	1469	
L19	Shunt Peaking Coil	10Ω		T10-578	19-4412		4648 ▲	410 Microhenries, wound on 10KΩ resistor
L20	Sound IF	1Ω		T10-556	17-3400	TV-151	1469	
L21	Ratio Det.	3.8Ω	.3Ω CT	T10-552	17-1033 †	TV-110 †	1468 †	Tertiary winding -.85Ω
L22	Horiz. Osc.	60Ω		T10-583	19-1576	TV-163	6210	Silvertone part number includes C75.

* Enlarge mounting hole.
† Drill mounting holes and disconnect C48 across primary winding.
■ Parallel with 8.2KΩ resistor.
▲ Parallel with 10KΩ resistor.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SILVERTONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	5 Amp. 250V	T43-12	T87-44	312005 (3AG 5A)	341001	MTH5	HKP
M2	3AG P/T	1/4A. 250V.	T43-13		318.250 (3AG 1/4 A P/T)		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Pilot Light	T87-7	Type #47
M4	RF Tuner	T95-30	
M5	Ion Trap	T83-684	
B2	Trimmer Cap.	T20-145	Horiz. Drive
	Cabinet	T42-547	
	Back Cover	T32-23	
	Bezel	T40-230	
	Mask Plate	T31-209	
	Control Cover Assy.	T84-717	
	Knob	T52-390	TV-Phono Selector
	Knob	T52-395	Channel Selector
	Knob	T52-396	Fine Tuning
	Knob	T52-397	Contrast
	Knob	T52-398	Off-on-volume

TROUBLE SHOOTING AIDS (cont)

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10 and V11. Check stages of V10B and V11 by applying. audio signal to control grid pin #7.

If Satisfactory	If Unsatisfactory
Check adjustment of ratio detector. Check components associated with V9 and V10A.	Check components associated with V10B and V11 especially T9 and SP1.

BUZZ

Readjust ratio detector secondary for minimum buzz. Check audio IF alignment. If buzz is still objectionable substitute V10 and readjust A8.

DISTORTED

Check stages of V10B and V11 using audio signal generator and scope.

If Distorted	If Undistorted
Check components associated with these stages especially coupling and bypass capacitors	Check alignment and components of the audio IF amplifier and ratio detector stages.

POWER

DEAD SET

Check fuse (M1). Check AC interlock assembly. Check switch on volume control. Check T1.

SMALL AND/OR DIM RASTER

Substitute V20. Check B+ filter and decoupling networks.

DIM PICTURE WEAK SOUND

Substitute V20. Check B+ network.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check 1/4Amp. fuse (M2). Check by substitution V16, V17, V18, V19 and V20. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check R89, R90, C83, T3, T5A and other associated components.	Check C77, C78, C79 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18, V19 and V20. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check V17, V18 and V19 by substitution. Check R89, R90, C83, T3, T5A and other components associated with the high voltage section. Check picture tube for gassy condition or low emission.

GENERAL

RASTER SOUND NO PICTURE

See "Loss of Video".

TOTAL LOSS OF SYNC

Check by substitution V12. Check components associated with this stage.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

SNOWY PICTURE POOR SOUND

Check by substitution V1, V2, V3, V4, V5 and V6. Check associated circuit components.

RASTER NO SOUND NO PICTURE

Check V1, V2, V3, V4, V5, V6, V7 and V11. Check associated circuit components.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

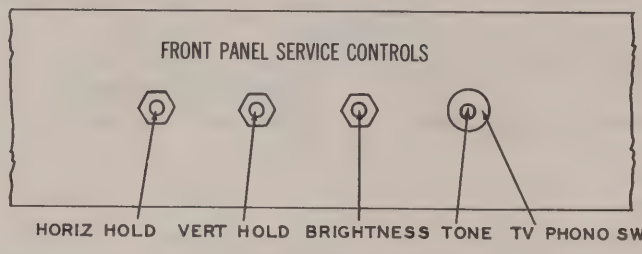
PICTURE TUBE SAFETY GLASS CLEANING

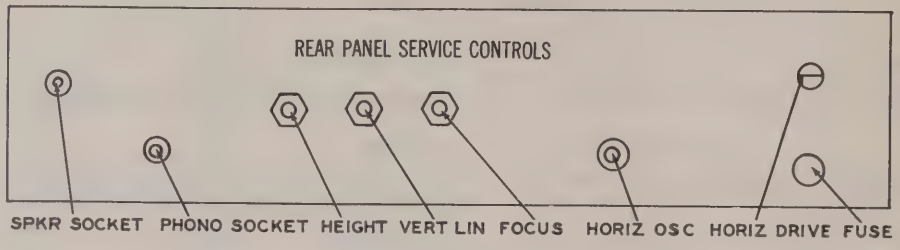
To clean safety glass, remove 6 metal screws holding metal bezel. Remove bezel and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal oscillator slug (L22) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L21) located on top of chassis. (See tube placement chart).

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection. (For location, see tube placement chart).

CENTERING

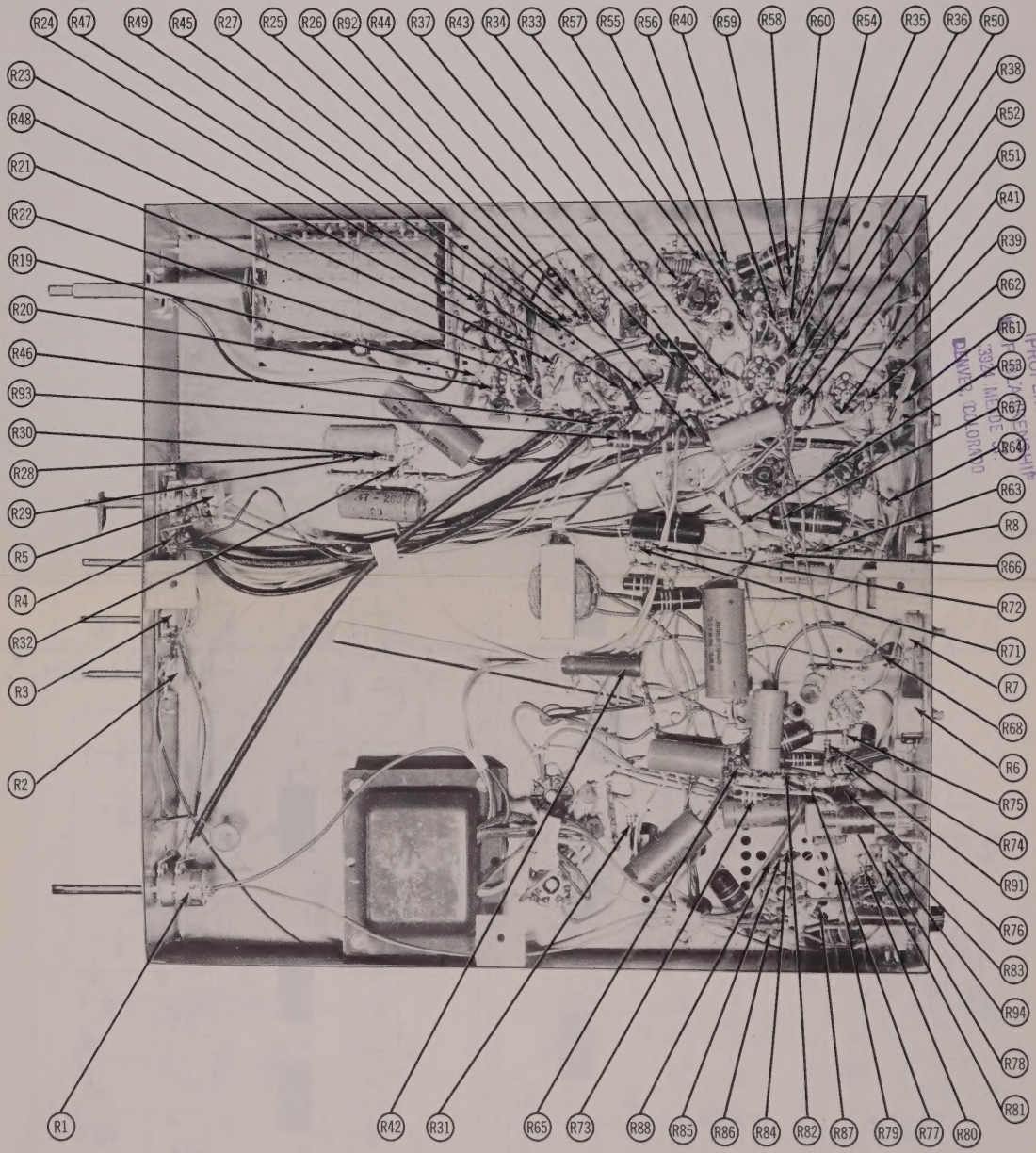
Centering is accomplished mechanically by positioning the focus coils. Adjust the three wing nuts located on the focus coil bracket until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Loosen 7 wood screws. Lift rear cover up and then out to remove.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect speaker. Remove 4 speaker nuts. Remove speaker.

(Above not necessary for chassis removal).

5. Remove 4 chassis bolts. Remove chassis.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION